http://www.oldgamesitalia.net/

commodore WORLD

THE NEWS MAGAZINE FOR COMMODORE 64 & 128 USERS • ISSUE 21 • $4.95 U.S.

PRINTER INTERFACES
Your Connection to Standard Printers

Scrollable Input
Machine Language Subroutine

Inside BASIC
BASIC's Internal Structure

Plus...
- Do You Need RAM Expansion?
- The Compleat Dave
- 65816 Block Moves

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

CONTENTS

• ISSUE 21 • Published October 1997 •

COMMODORE WORLD
THE NEWS MAGAZINE FOR COMMODORE 64 & 128 USERS

http://www.cmdweb.com/cwhome.html

GENERAL MANAGER
Charles R. Christianson

◆

EDITOR
Doug Cotton

◆

ADVERTISING SALES
Charles A. Christianson
(413) 525-0023

◆

GRAPHIC ARTS
Doug Cotton

◆

ELECTRONIC PRE-PRESS & PRINTING
Mansir/Holden

◆

Cover Design by Doug Cotton

Commodore™ and the respective Commodore product names are trademarks or registered trademarks of Escom GmbH. Commodore World is in no way affiliated with Escom GmbH., owner of the Commodore logo and technology. Commodore World is published 8 times annually by Creative Micro Designs, Inc., 15 Benton Drive, East Longmeadow MA 01028-0646. Second-Class Postage Paid at East Longmeadow MA. Annual subscription rate is US$29.95 for U.S. addresses, US$35.95 for Canada or Mexico, US$45.95 for all EC Countries, and US$57.95 to all other addresses worldwide. All subscription payments must be provided in U.S. Dollars. Mail subscriptions to CW Subscriptions, c/o Creative Micro Designs, Inc., P.O. Box 646, East Longmeadow MA 01028-0646.

Entire contents copyright © 1997 by Creative Micro Designs, Inc., unless otherwise noted. No part of this publication may be printed or otherwise reproduced by any means without prior written consent from the publisher. All programs published in this publication are for the personal use of the reader, and may not be copied or in any way distributed. All rights reserved. Programming examples and routines in this issue which are presented for educational purposes may be used in the creation of programs by the purchaser of this magazine, provided credit for the routines is clearly presented in either the program documentation, or the program itself. Creative Micro Designs, Inc., assumes no responsibility for errors or omissions in editorial, program listings or advertising content. Creative Micro Designs, Inc. assumes no liability for advertisers claims or reliability.

POSTMASTER: Send address changes to: CW Address Changes, c/o Creative Micro Designs, Inc., P.O. Box 646, East Longmeadow MA 01028-0646.

FEATURES

10 WHAT EVERYONE SHOULD KNOW ABOUT PRINTER INTERFACES
Doug Cotton
12 CAUTIOUS MARKET DECISIONS
K. Dale Sidebottom

REVIEWS

22 HARDWARE: CMD's 1750 & 1750XL REUs
Jason Compton
23 SOFTWARE: THE COMPLEAT DAVE
Jason Compton

COLUMNS

18 JUST FOR STARTERS
Jason Compton
24 GRAPHIC INTERPRETATION
Paul Sullivan
26 DEMOMANIA
Sherry Freedline
28 CARRIER DETECT
Gaelyne R. Gasson
30 BASIC INSTINCTS
Doug Cotton
34 GEOPROGRAMMIST
Maurice Randall
36 ASSEMBLY LINE
Mark Fellows
39 816 BEAT
Mark Fellows

DEPARTMENTS

2 FROM THE EDITOR
4 BACKTALK
6 ON THE HORIZON
8 COMMODORE TRIVIA
44 CLASSIFIED ADS
44 ADVERTISER'S INDEX

See Our CHECKSUM Utility On Page 27

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

FROM THE EDITOR

HAS YOUR COMPUTING AFFECTED YOU?

One of the more interesting threads (that's the term applied to a series of online messages concerning a specific subject) that I've seen lately in the Commodore Usenet group (comp.sys.cbm) is one that asks the question, "What made you want a Commodore 64/128 computer?" The responses to this have been in some cases typical, but some are rather interesting. Seein the question and the responses there naturally made me pause to reflect on why (and how) I got involved with Commodore computers, and even more generally with computers themselves.

Having come from a technical background where I regularly worked with, designed and repaired electronic devices, the introduction of lower cost computers was naturally of great interest to me. My own knowledge of how they worked from a hardware standpoint was, while incomplete, at least generally sound. But my curiosity about how software and programming could instruct a limited amount of hardware to do so many things is what probably drove me to buy my first computer 'kit'.

I recall the arrival of my new purchase being met with much excitement and anticipation. I'd already begun to play around a little with a single-board computer (SBC) we had at the office, but it was extremely limited. Unfortunately, so too were my own funds, and my 'kit' consisted of little more than an 8085-based S-100 motherboard with very little RAM, and a small OS. But this was a fully expandable system, capable accessing a whopping 64K of RAM once I could afford that much. And unlike the SBC from the office which had only a hex keypad and four 7-segment display modules, my new machine had a keyboard interface and a CRT text display controller on-board.

A few hours of soldering later, I did have a working computer, though I had to take it to a fellow engineer's house to test it out with his keyboard and monitor. But there is where I caught sight of an amazing box, owned by the engineer's son—he called it a Commodore PET. While the display was monochrome, it actually had graphics, and could do some mighty amazing things.

It wasn't long afterwards that Commodore announced the VIC-20, an inexpensive computer with color, and I had to have one. I abandoned the idea of expanding that S-100 machine (which would have cost over $1000 to complete). I saved and waited for prices to drop, and before long I was learning to program on one of the hottest new consumer devices around. The natural migration to a Commodore 64 came a year or so after its release, and by then I had that firm grasp of the concept of software I'd been looking for.

Looking back, I'd have never guessed that my initial desire to learn about software would have brought me to where I am today, Editor of one of the last bastions of support for the C-64. But it makes me curious to know, how has your own involvement with computers affected you?

Doug Cotton
Editor

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

LOADSTAR® MONTHLY

LOADSTAR is a monthly "magazine on disk" for the Commodore 64/128. Subscribers receive two 1541 disks (or one 1581 disk) in their mailbox every month packed with news, articles and programs. These non-PD, high-quality programs are written by the best home-based programmers in the field and edited by the crack LOADSTAR team of Fender Tucker and Jeff Jones. Subscription prices are at an all-time low of $69.95 for a 12-month subscription, or $19.95 for a three-month subscription. You may also elect to subscribe "by the month," where we charge your credit card $7.95 for each issue after it's shipped. We also offer the long line of standalone products below.

✔ **NEW Games Disk! The Compleat Jon:** 11 Games! The whole gamut of gaming is covered here: artificial intelligence, role-playing, mazes, fantasy, science fiction, education and even non-violence (which was a radical concept in its time). These eleven games are among the best ever published on LOADSTAR. Listed on the menu in chronological order, so you can see how Jon's style changed as the years rolled by. **1581 disk 0021D3 $20. 1541 disk #0038D5 $20**

✔ **NEW Puzzle disk! The Compleat Crossword:** Every crossword puzzle published in Puzzle Page in one huge collection! 220 puzzles! It uses Barbara Schulak's CRUCIVERBALIST program to present the puzzles and allows you to "mark" a puzzle when it's solved so that you know which you've solved and which you haven't yet. Each 1541 disk contains 110 puzzles. **1581 Disk #0020D3 $20. Disk 1 (1541) #0036D5 $10.Disk 2 (1541) #0037D5 $10**

✔ **NEW C-128 Productivity! The Compleat Lee O:** Six of Lee O. Clinton's best serious programs for the C-128 80- column mode. Finance, auto expense, kitchen helper, genealogy, resume writing, mutual funds! **One 1541 disk #0032D5. One 1581 disk #0017D3 $10.00**

✔ **NEW Word Search! Super Star Search 1:** 200 original word search puzzles by Steven Thomas and Art Dudley, presented by John Serafino's modern point and click program. **One 1541 disk #0011D5 One 1581 disk #0008D3 $20.00**

✔ **NEW Story disk! The Compleat Prosequest '95:** NEW!! A 1541 disk with all of the entries in the 1995 short story writing contest on it, including the three grand winners. **One 1541 disk #0035D5 One 1581 disk #0019D3 $5.00**

Soft Wear! LOADSTAR T-Shirts: Limited edition Fruit Of The Loom T-shirts. LOADSTAR's nemesis, Knees Calhoon, stands up to regular washing and drying. Where else can you find Commodore apparel? 50% Cotton/Polyester. **$15.00 each with *free shipping*! Small #960025, Medium #960125, Large #960225, X-Large #960325, XX-L #960425**

Tools! Tutorials! The Compleat Programmer: Best seller! Over Two megabytes of knowledge crammed and stuffed onto eight 5.25-inch disks or two 1581 disks! Plus tools, extensions, languages, assemblers, tutorials and utilities! **5.25 set #0005D5. 3.5-inch disk #0005D3. For $5 more, get C= Hacking MAG #0006D3 (on 3.5-inch disks only and NOT available separately)** to complete your programming set. **$20.00**

PS Graphics! Compleat PS Vol. 1 (The Print Shop by Broderbund or Printmaster required). Over 1300 artistic and never before published PRINT SHOP images. Scan through the many PRINT SHOP images sequentially, by name, or by group number. Press a key and save the graphic you want in 2-block, 3-block and even PRINTMASTER graphic files! All that plus a printed guide! Each volume is $20.00. **Vol. 1: C-64/128 3.5-inch disk item #0001d3. 5.25-inch disks item #0009d5. Vol. 2 (graphics from past LS issues): C-64/128 3.5-inch disk item #0002d3. 5.25-inch disks item #0010d5.**

GEOS Clipart

LOADSTAR presents the biggest Geos collection of clip art and fonts ever offered at one time. All of the Geos art that's ever appeared on LOADSTAR, as well as some great files from Geos fanatic Dick Estel, are available on twenty 5.25 inch disks or eight 3.5 inch disks. Most of this has never been seen before! Use these graphics in your GeoPaint, GeoWrite and GeoPublish documents or convert to FGM with FGM utilities. Spiff up your GeoFAX documents with the appropriate graphic -- every time! Prices are $20 for any two 3.5 inch disks, or any five 5.25 inch disks. You can purchase the whole collection for $75 for either version. Call LOADSTAR toll-free at 1-800-594-3370 or 1-318-221-8718 to order by credit card. Or send check or money order and specify (by LG number) which disks you want.

5.25-INCH DISKS

Disk 01 - RAILS: Railroad art from Europe and the USA **#0012D5**

Disk 02 - VEHICLES/TAROT: Artwork of old and new autos; excellent geoPaint drawings of the Tarot card set **#0013D5**

Disk 03 - CLIP ART: Includes converted MacPaint files that have never before been available in Commodore format **#0014D5**

Disk 04 - OTTOWA/PRIME CLIPS: Artwork of the main landmarks of Ottowa; plus high quality public domain clip art **#0015D5**

Disk 05 - FONTS: More than 30 fonts from past issues of LOADSTAR, plus articles (in geoWrite format) on creating fonts. Also two ready-made headers for use with your own documents, one a picture of a mail truck; the other reading FROM THE DESK OF **#0016D5**

Disk 06, Disk 07, and **Disk 08** - geoPaint and Photo Album files with the great clip artwork featured on past LOADSTARS - Includes GeoCurmudgeon, Anamalia I and II, Australian Animals, Valentine art and many more **#0017D5, #0018D5, #0019D5**

Disk 09 - GOODYKOONTZ FILES - Jasper Goodykoontz, born in Indiana in 1855, produced Goodykoontz's Perpetual Calendar and General Reference Manual (A Book for the Millions). This disk includes scans from the book of a wide array of subjects -- Gestures and Attitudes, Poultry, Craniology, and more. **#0020D5**

Disk 10 - OLD WEST: Scanned Artwork from Dick Estel's FRD Software - mostly woodcut style art of the old west, gold rush days and pioneer scenes. **#0021D5**

Disk 11: J. Neely Art/Animals: Jennifer Neely works with a wide variety of subject matter and materials. Disk contains some of her favorites, scanned into geoPaint format. Side 2 is a collection of scanned artwork of animals from FRD Software **#0022D5**

Disk 12 - HOLIDAY: Artwork for New Years, Valentine's, St. Patrick's Day, Halloween, Thanksgiving and Christmas **#0023D5**

Disk 13 - PEOPLE/FACES: Scenes of people and faces from FRD Software **#0024D5**

Disk 14 - FRD CLASSICS: Dick's choice of the best of the FRD collection **#0025D5**

Disk 15 - DINOS/CLASSICS: Dinosaurs and other prehistoric beasts, as well as more first choice artwork from FRD. **#0026D5**

Disk 16 - SPORTS/MISC: Dozens of sports-related clips **#0027D5**

Disk 17 - OFFICE AND SCHOOL: Clips to be used at work and around the house **#0028D5**

Disk 18 -MUSIC & MORE SCHOOL CLIPS #0029D5

Disk 19 - SEASONAL AND HOLIDAYS: A clip for any occasion **#0030D5**

Disk 20 - SEASONAL AND HOLIDAYS: A clip for any occasion **#0031D5**

3.5 INCH DISKS

The 3.5" disks are roughly equivalent to two and a half 5.25" disks.

Disk 1: Equals disks 1, 2, 4B #0009D3
Disk 2: Equals disks 3, 6, 7A #0010D3
Disk 3: Equals disks 5, 8, 7B #0011D3
Disk 4: Equals 9, 10, 11A #0012D3
Disk 5: Equals 12, 13, 11B #0013D3
Disk 6: Equivalent of Disks 14, 15 and some bonus files not on 5.25" disks **#0014D3**
Disk 7: Sports, Office and school, Music #015D3
Disk 8: Music, Holiday and Seasonal #016D3
For your convenience, GeoViewer is included on each volume. GEOS 2.0 is suggested.

Free Shipping! For Every Item on this page!

Diskfulla Card Games! The Compleat Maurice: A compilation of 26 solitaire card games written by Maurice Jones, the acknowledged master of card game simulations for the C-64/128. There's even a brand new, never before published game called Boomerang. **Two 5.25 inch disks #0007D5 or one 3.5 inch disk #0007D3. $20.00 postage paid!**

Oodles Of Stunning Art! Tutorials! The Compleat Walt: During LOADSTAR's first ten years we have published 24 of Walt Harned's slideshows and multimedia events. Now we've gathered them into one huge collection: seven 5.25 inch disks or three 3.5 inch disks! There are over 250 pictures, including some that have never been published. The greatest one-man collection of art on any computer platform. **5.25-inch disks order #070425 3.5-inch disks order #070423. $20.00 postage paid!**

Loadstar Order form ☎ 1-800-594-3370

QTY	Description	Item #	Price ea.	Total

Use extra sheet of paper for large orders

Name _____

Address _____

City _____ State _____ Postal Code _____

Total Enclosed: _____

❑ Check/money order made payable to "Loadstar" in US Funds

❑ MasterCard ❑ Visa ❑ American Express ❑ Discover

Card # _____

Exp Date ____/____ Authorized signature: _____

Subscribers: I prefer ❑ 5.25-inch diskettes ❑ 3.5-inch diskettes

LOADSTAR
P.O. Box 30008, Shreveport, LA 71130-0008
Questions: 1-318-221-8718 Fax 1-318-221-8870

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

BACKTALK

LETTERS AND QUESTIONS FROM OUR READERS

Dear CW,

I had numerous friends that worked in the development of some of the combat simulation games for the Commodore line of computers. The artificial intelligence of the opponent was difficult to program in the small amount of computer space available after the graphics and I/O was programmed. One of my friends stated that there is a sort algorithm that greatly enhanced the artificial intelligence of the machine, but it was not used since the amount of time that it took for the computer to make one move (three to twelve hours, based on the complexity of the matrix).

With the development of the CMD accelerator board, the addition of the sort algorithm might create a renewed interest in these simulations. I have not been able to find any software notes or comments on the internet, so perhaps one of your experts might be able to come up with the software patch. The Gettysburg game from SSI and the SSG line of combat simulations are the games that I am familiar with that have the sort algorithm.

-GC

Of the many contributors we've had over the years, the only one I can think of who might have had some insight on this would be Gene Barker of Madman Software. Unfortuneately, it appears that Madman has slipped away, and we haven't heard from Gene in many months. Often, however, we find that there are many experts on various subjects who read our magazine, so we've reprinted your letter in hopes that someone else can provide further insight on this subject.

Dear CW,

Another pat on the back; thanks for continuing to support Commodore users with hardware/software and printed media support. Back in June, 1997, I was seriously considering recycling my Commodore equipment via the local recycling center. Last year I attempted to sell my equipment at a local HAMfest; I got the impression from passersby that they used to have PC's a few years ago before upgrading, or 'How much do you want to pay me to take these ancient machines off yer hands?'.

Well, I didn't give them away, nor did anyone buy them. I conceded that I could use at least one of the four Commodores for a packet radio setup in my ham shack, so as to leave my 486DX2-66 free for personal finances, online internet surfing, email/wordprocessing, and occasionally to play with one of the two games I have installed, Mah Jongg and Solitare (I'm not much of a game player).

A CMD newsletter-advertisement arrived in the mail. I hadn't heard from CMD for some time. I was elated that CMD was still in existence, especially after reading the content of the newsletter. You see, I'd been Commodore ignorant for the past two and one-half years, playing with my 486. I wasn't aware that CMD was authoring a magazine in support of Commodore users around the world.

I ordered a subscription and all past issues so I could catch up with what's been happening. I had already made a significant investment in a RAMLink with 16 MB and a HD200 several years ago, but I was surprised to learn that Commodores were accessing the internet with speeds I only thought possible with 16- and 32-bit machines. Also, what was this SuperCPU 64 listed in the newsletter?

About two weeks later the back issues of Commodore World arrived and I began scanning the front page of each issue. I read every article that mentioned the SuperCPU 64 and was very impressed. By year's end I will have at least one SuperCPU 64 and if the SuperCPU 128 is ready soon I will have one of them as well. Knowing that there are dedicated people supporting improvements to Commodores has rekindled my interest in using my mine. I will be looking forward to experimental programming of the of the SuperCPU 64 and SuperCPU 128 in 16-bit mode and watching other programmers develop software for this new platform.

I wonder, is CMD experimenting with an enhancement to Commodore video so that a GUI will be available to Commodore users on the internet? I don't have the technical prowess in this area, and I would welcome any feedback from CMD in CW. Thanks for the support and rekindling my interest in Commodore.

-TM

It always makes us happy to hear stories like yours, because it helps to affirm that what we do at CMD and CW does make a difference.

With respect to advancing the video capabilities of Commodore 64/128 computers, this is something that CMD has looked at from a few different perspectives, but there are no plans to do so at this time. Two significant hurdles have been identified: first, an advanced video interface would almost certainly require a more advanced monitor than most users have, so it would be expensive to add such an upgrade; second, program compatibility would be very difficult to achieve, and it is most likely that only new programs written specifically for the new video standard would work. If you combine these two, it spells little success for such a product. Should CMD manage to find some ways to circumvent these problems and make such a product more widely acceptable, I'm sure it would be reconsidered.

Dear CW,

My C-64 is unable to connect to my 1541 disk drive. Device not found is all I get. I have an old VIC-20 and it will work with my drive thus verifying that my cable connections and drive are perfectly alright. Perhaps I may need to type a POKE or PEEK to get it to work again. Can you help my owners manual is as worthless as a drowning man being rescued by another drowning man.

-TK

I'm sorry to be the bearer of bad news, but there appears to be a problem with your computer itself. Since the drive works okay on your VIC-20, it is likely that the serial bus on your C-64 is faulty. This may be a bad 6526 CIA chip, though there are other possible problems that could cause the result you're getting. You may want to contact one of the advertisers in this issue that offers repairs to see about getting your C-64 checked out.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

We're Back...

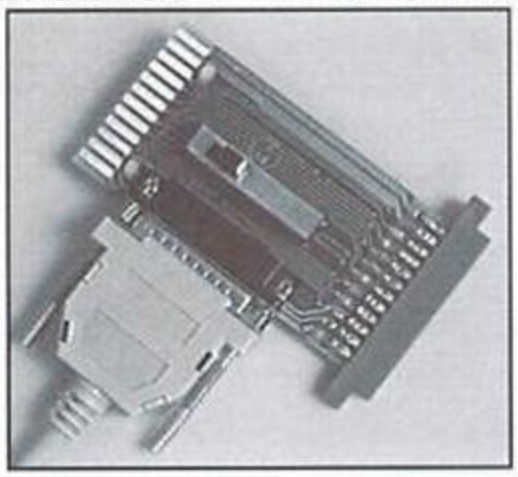
Centsible Software

New Ownership • Huge Inventory • Great Prices

Over 3000 titles in stock for C-64/128, Amiga and IBM platforms (Previously SSI)
Reasonable prices on hard-to-find titles
Free product listing

8818 College Ave., Berrien Springs, MI 49103
Phone: 1-616-471-1089 • Fax: 1-616-473-3456

GEOCABLE II
Parallel Print Cable



The Most Advanced Parallel Print Cable Ever!

- **Uses Standard Cable** Equipped with a female DB-25 cable connector to allow use of standard 'PC' printer cables.
- **Switchable Pass-thru** Allows connection of printer and other user port peripherals such as modems without conflicts.
- **Faster Output** Parallel printing offers up to a 40% increase in output speed.
- **GEOS Drivers Included** Includes GEOS drivers plus useful GEOS utilities like MacAttack II, WrongIsWrite, and GEOS CONVERT.

GEOCABLE-II (6 ft.) **ONLY $29.00**
GEOCABLE-II (15 ft.) **ONLY $34.00**
Shipping: US $5.00, Canada $7.00, Foreign $25.00.

GeoCable II is compatible with GEOS, Perfect Print LQ, Action-Replay MK VI, Superbase, Superscript, Paperclip III, and all software that supports user port parallel printing.

CMD **Creative Micro Designs, Inc.**
P.O. Box 646
East Longmeadow, MA 01028
Orders: 800-638-3263
Info: 413-525-0023

CW & RUN BACK ISSUES

For years, *RUN* Magazine provided Commodore Users with a great source of information, and now CMD has given you *Commodore World*. Don't let this valuable information slip away—fill in the voids in your library now!

RUN Magazine Back Issues
Any 3 issues for $12.00, any 6 for $18.00, or any 12 for only $24.00

RMJAN89	January 1989	RMJUN90	June/July 1990
RMFEB89	February 1989	RMDEC90	December 1990
RMMAY89	May 1989	RMJAN91	Jan/Feb 1991
RMJUN89	June 1989	RMJUN91	JuneJuly 1991
RMJUL89	July 1989	RMJAN92	Jan/Feb 1992
RMAUG89	August 1989	RMMAR92	March/April 1992
RMSEP89	September 1989	RMMAY92	May/June 1992
RMOCT89	October 1989	RMJUL92	July/August 1992
RMSP89	Special Issue 1989	RMSEP92	Sep/October 1992
RMJAN90	January 1990	RMNOV92	Nov/December 1992
RMMAY90	May 1990		

Shipping: 3-6 issues - U.S. $3.00, Canada $5.00, Foreign $15.00; 12 issues U.S. $5.00; Canada $7.00; Foreign $20.00.

Commodore World Back Issues
$4.95 each, or any 3 for only $12.00

CW1	Commodore World Issue 1	CW11	Commodore World Issue 11
CW2	Commodore World Issue 2	CW12	Commodore World Issue 12
CW3	Commodore World Issue 3	CW13	Commodore World Issue 13
CW4	Commodore World Issue 4	CW14	Commodore World Issue 14
CW5	Commodore World Issue 5	CW15	Commodore World Issue 15
CW6	Commodore World Issue 6	CW16	Commodore World Issue 16
CW7	Commodore World Issue 7	CW17	Commodore World Issue 17
CW8	Commodore World Issue 8	CW18	Commodore World Issue 18
CW9	Commodore World Issue 9	CW19	Commodore World Issue 19
CW10	Commodore World Issue 10	CW20	Commodore World Issue 20

Shipping: U.S. and Canada $2.00 for first issue, plus $1.00 per additional issues.; Foreign $5.00 per issue.

TO ORDER CALL 1-800-638-3263

http://www.oldgamesitalia.net/
http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

ON THE HORIZON

COMMODORE AND COMPUTER INDUSTRY NEWS

Centsible Software Returns

In a recent show of support for the Commodore computer line, Scott Parker of Berrien Springs, MI, announced that he has purchased Centsible Software. In addition, the newly reformed company has also purchased the Commodore 64 & 128 inventory of Software Support International.

The aquisition of SSI's inventory is of great significance to the Commodore community, as this assures the supply of a broad range of software for years to come.

Mr. Parker commented on the purchase, "At this time we are in the process of sorting through and familiarizing [ourselves with] this huge inventory."

Mr. Parker also indicated that advertising in Commodore World would provide further details about availability, pricing, and other related information.

The Commodore Saga: Recap

Somehow, a full three years after its bankruptcy, the name "Commodore" continues to make news.

As you might recall, in April 1994 Commodore International went into bankruptcy. One year later, the vast bulk of its assets and intellectual property, including the Commodore 8-bit and Amiga lines of computers, were sold to Escom AG of Germany, a prominent PC clone maker.

But the Christmas of 1995 was a rough one for Escom, and Commodore had been just a small part of their spending-heavy expansion policy that year. Escom never recovered and themselves went into bankruptcy in June 1996.

It's time to split up the Commodore goods again. In late March, Gateway 2000, the ubiquitous cow-spotted PC clone company from the Dakotas, put in an offer for the Commodore properties purchased by Escom, excluding the Commodore name and trademark. That offer was accepted in May, and Gateway 2000 is the official owner of the Commodore computer technologies. They have made a number of announcements to the Amiga market since their acquisition.

The Commodore trademark has an even stranger story. It was the source of controversy during the original 1994-1995 bankruptcy because the trustee of the Commodore Germany subsidiary, one Mr. Hembach, had attempted to sell the Commodore name to Escom on his own terms. But this was eventually declared invalid by the court overseeing the Commodore International bankruptcy, forcing Escom to buy the entire package of assets to obtain the name.

One of the men who lead Escom's efforts to acquire Commodore, Bernard van Tienen, was rewarded with the top management at Escom's Netherlands branch. When Escom went bankrupt, van Tienen managed to keep this Dutch office open and operational. He went one step further, he bought the Commodore name from the Escom bankruptcy trustee That trustee's name? Hembach!

So, after this transaction, "Commodore", who we knew as a multinational computing pioneer, became the moniker for a smallish chain of PC clone stores and their parent manufacturer. But the story doesn't end there.

In late June, it was announced that Tulip Computers of the Netherlands was in negotiations to buy Commodore BV. Tulip, a PC clone rival, expects that the merger will boost the overall performance of both companies and make the pairing among the top 10 computer manufacturers in Europe.

Gateway has not specifically addressed the Commodore 64 or related technologies in any public statement. The much-touted restart of 64 production in Eastern Europe promised by Escom seems to have fallen flat, but reports of illegal 64 clones continue to surface from Germany and beyond. So, in case you're keeping score at home:

Commodore: Developed the 64 and Amiga, RIP 1994
Escom: Bought the 64 and Amiga in 1995, RIP 1996
Commodore NL: Formed from Escom NL, being sold to Tulip.
Gateway 2000: Bought the 64 and Amiga in 1997.

SuperCPU 128 Update

CMD reports that the hardware design of the SuperCPU 128 has been completed, and that they are presently in the board layout phase of the project. Some firmware development remains to be completed, but head engineer Mark Fellows indicated that this would be accomplished after the board layout is completed, and while boards are being manufactured.

No specific date for release has been set at this time, but entering this phase of the project indicates that this should be only a few weeks from now.

English Language Version of Godot Set to Release

CMD has recently announced that they will soon begin shipping the english language version of Godot, an impressive graphics program for the Commodore 64. The program is similar in function to the popular Adobe Photoshop program used on other platforms, and allows Commodore users to enhance and convert graphic images. Godot sports an easy-to-use point-and-click user interface, comes with a large number of effects modules, and supports a wide range of graphic file formats from both Commodore and non-Commodore platforms. Pricing has not yet been announced, but availability could be as early as mid-October.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

Need Input? It Doesn't Get Any Better Than This...

For years, Commodore set the standard with the 1351 mouse. Sure, it was vastly superior to using old digital input devices like the 1350 mouse or joysticks. But everything can be improved. Guaranteed 100% 1351-compatible, SmartMouse does everything the C-1351 does and more! This highly intelligent, three-button input device includes a built-in battery-backed Real-Time Clock, along with double-click and Turbo features for GEOS. Plus, it comes with a complete set of utilities for using the clock in GEOS and BASIC applications. Modern ergonomic designs makes SmartMouse a smooth operator that's a pleasure to use. So, if you're tired of the slow, erratic movement of your current input device, make the intelligent choice and pick up a SmartMouse today!

$49.95 Plus S/H

SmartMouse is the Most Advanced Mouse Ever Created for the Commodore 64 and 128 Computers!

SmartMouse

- **Three buttons means convenience! If you're a GEOS user, the left button is configured as single click, the right as a handy double click and the center button is the TURBO button which doubles the speed at which the pointer moves across the screen. All three are fully programmable for other application.**
- **SmartMouse uses the same custom gate array chip as the Commodore C-1351 mouse to guarantee 100% compatibility.**
- **Switches easily into joystick emulation mode on power-up by holding down the right button.**
- **SmartMouse utilizes the same advanced technology used in today's powerful 486 and Pentium PC's, providing you with unparalleled accuracy and smoothness.**
- **Built-in battery-backed Real-Time Clock automatically sets the GEOS clock, displays time and can be used in your own programs.**
- **Includes utilities disk and detailed manual explaining the utilities and programming information.**
- **Attention Lefties! SmartMouse can be altered for left handed use.**

COMMODORE COUNTRY

Everything for Commodore Computers
Sell • Trade • Repair • Buy
1420 County Rd. 914
Burleson, TX 76028
817-295-7658
817-447-6974 - Voice/FAX line

ALL STORE ITEMS HAVE A 90 DAY WARRANTY. IF, FOR SOME REASON YOU ARE DISSATISFIED IN YOUR PRODUCT, YOU MAY RETURN IT FOR REPLACEMENT OR STORE CREDIT ONLY. SORRY, NO REFUNDS.

C64/1541 Repair - $40
SPECIAL
C64, 1541, J-S+Sft. - $99

We carry a full line of hardware, software & magazines, both new & used, including European items. Our flat-rate repairs include both parts & labor. Call for details. Trade in your unwanted items.

Catalog - $2.95
ALL MAJOR CREDIT CARDS ACCEPTED.

We carry a full line of Amiga Products.

TECH STAR COMPUTER CENTER
(206) 251-9040

We'll repair your Commodore.

Serving the Commodore community since 1984.

REFURBISHED SPECIALS

SYSTEMS

C64.....$69.00	1541.....$69.00	C64 & 1541.....$120.00
64C.....$79.00	1541 II...$79.00	64C & 1541 II....$140.00
C128.....$89.00	1571.....$89.00	C128 & 1571.....$150.00
VIC20.....$59.00	SX64.....$CALL	128D.....$CALL

PRINTERS

1525.....$49.00	MPS 801.....$59.00
1526.....$69.00	MPS802.....$69.00
SG10.....$89.00	Star 10X.....$79.00
Star 15X.....$99.00	SG10C.....$89.00
MPS 803.....$69.00	DPS 1101.....$99.00
DPS 1101....$99.00	OKI 10.....$69.00
OKI 20.....$79.00	

MONITORS

1701.....$119.00	
1702.....$119.00	
1802.....$119.00	
1080.....$159.00	
1084.....$159.00	
1084S.....$159.00	
CMONO...$ 29.00	
MONO.....$ 59.00	

MISC.
Power supplies, cables, ribbons, paper, disks, cartridges, programs new and used, books, magazines, accessories.

R A Y M O N D
COMPUTER

COMMODORE Software (new and used) plus hardware, expert repairs, cables, ribbons, blank disks, books

NEW Joysticks-leaf-spring, pistol grip-suction cup

Visa / Master Card / Discover / Amex / Bravo
e-mail raycomp@visi.com
795 Raymond Ave. 612-642-9890 vox
St. Paul, MN 55114 612-642-9891 fax

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

COMMODORE TRIVIA

by Jim Brain

Welcome to another edition of Commodore Trivia. As many of you may know, these trivia questions and answers have been donated by me to the Commodore community at large. Unlike other articles in *Commodore World*, these trivia questions have been placed in the public domain. I ask only that the trivia questions remain intact and unchanged, and that my name and address appear somewhere so users can contact me. The trivia is also used for a contest I run on the Internet; contact me at the included address for more information. Because curiosity has the best of me, I always welcome a note or postcard detailing where the trivia goes. I also welcome new questions—provided they come with the answers. Enjoy!

Jim Brain
Brain Innovations, Inc.
10710 Bruhn Ave
Bennington, NE 68007
j.brain@ieee.org

COMMODORE TRIVIA #20 QUESTIONS

A publication describing BASIC on the Commodore makes the claim that BASIC variables are limited to 5 characters, with the first two being significant. The example to prove this point in the book is given as:

```
ABCDE=5works, while
ABCDEF=6          does not.
```

The following questions refer to this claim:

$160) What is wrong with the above statement?

$161) What causes the variable ABCDEF to fail?

$162) How long can variable names really be? (Extra Credit: Who was the book publisher?)

$163) How many keys were on the CLCD keyboard?

$164) What does LCD in the Commodore LCD stand for?

$165) Was an internal modem to be includes?

$166) Like the Plus/4 the CLCD unit had integrated software. What programs were included?

$167) How many batteries of what type did the CLCD use for power?

$168) Approximately how much did the CLCD unit weigh?

$169) What version of BASIC was to be included with the CLCD computer?

$16A) The CLCD unit contained a port that could be used with a Hewlett-Packard device. What did the device do?

$16B) What microprocessor did the CLCD unit utilize?

$16C) In addition to the usual inclusion of standard Commodore ports, what two industry standard ports were included on the CLCD?

$16D) How much RAM did the CLCD computer include?

$16E) How many pixels are on the LCD screen on the CLCD machine?

$16F) How much ROM did the CLCD computer contain?

$170) What text is displayed on the screen of a Commodore 128 upon bootup?

$171) How many bytes free does a Commodore 128 have on powerup?

$172) On the Commodore B-128 series, the bell beeps at the right margin. What column is the default right margin on the B-128?

$173) When a Commodore C64 is hooked up to a 1541 and an MPS 801 printer, everything is powered up and connected correctly, and the floppy won't load. What is wrong?

$174) How do you access the "hidden message" in the C128DCR?

$175) Some of you may remember the Commodore Magic Voice cartridge. If so, how many words was in the base unit's vocabulary?

$176) Who wrote the 3+1 software bundled with the Commodore Plus/4 in ROM?

$177) The BASIC extension "Simon's BASIC" was created by whom?

$178) Simons' BASIC was influenced a lot by what other computer manufacturer's BASIC?

$179) How many commands does Simons' BASIC add to the Commodore 64?

$17A) In the United Kingdom, there was an extension to Simons' BASIC developed by David. Among other things, what major complaint about the original BASIC extension does it address?

$17B) In the Commodore Plus/4 File Manager, there exists two bugs, which show up if you have over a certain number of records. What is this magic number?

$17C) Commodore Semiconductor Group (CSG) manufactured an 8500 IC. What common IC number is this IC functionally equivalent to?

$17D) How many BASIC commands were included in BASIC 3.5, not including the monitor commands?

$17E) On the Commodore VIC-20, 64, and C16 keyboards, what row and column pins on the keyboard connector does the letter D correspond to?

$17F) What is special about the keys in Row 4 of the hardware keyboard matrix?

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

COMMODORE TRIVIA #19 ANSWERS

$140) The early Plus/4 units contained a 7501 microprocessor, and the later units featured a 8501 microprocessor. The only differences between the two units is the manufacturing process and die size.

$141) 1.76 MHz.

$142) 8 shades each of 16 colors, but the 8 shades of black are still still black, so a total of 121 colors are possible.

$143) This version contained almost all of the commands in Version 4.0, plus some new commands for graphics and sound.

$144) The Western Digital WD1772 IC.

$145) On the very first 1541 drives (I suspect the feature was also on the 1540 as well), On power-up, the drive would jump to a subroutine at $E780 after performing the reset routine. The code there would check for the high state of CLOCK and DATA. If found, the code would wait until both go low and then store '*' into the filename buffer, sets the filename length to 1, and then jumps to the & command, which loads a USR file and executes it.

Since the Commodore computer never used this feature, and some machines would boot with these lines randomly high, Commodore removed the feature.

$146) The Commodore 128 Programmer's Reference Guide. Page 17.

$147) While it is specified as a valid serial bus address, when "or"ed with certain commands, it results in a bad command, hanging the bus and the serial drivers.

$148) Press the F7 function key.

$149) Gorf, VIC-1923. Pushing the joystick up toggles interlace mode.

$14A) BRK, CLV, and SED.

$14B) In order to calculate random values for the BASIC function RND(0), the first 4 registers of the CIA whose address is provided by the IOBASE KERNAL routine are read.

$14C) Video Display Controller.

$14D) A Commodore C64C with a built-in 1581.

$14E) A "thin 40" had a 9" screen and could not be upgraded. The "fat 40" had a 12" screen, and could be upgraded to a 8000 series machine with some upgrade chips.

$14F) If you hold down the cursor key and it repeats, you have a "fat 40". (Of course, inspection could also be used, as the "thin" unit had a smaller screen)

$150) 94 keys.

$151) For the 1541:

PCB# 1540001	The "long board", as used in the 1540.
PCB# 1540008-01	Minor revisions to the 1540001 board.
PCB# 1540048	The "short board".
PCB# 1540050	Minor revisions to the 1540048 board.
PCB# 1540050-01	ALPS mechanism
PCB# 1540050-03	Newtronics mechanism
PCB# 250442-01	A revision of the short board. 1541 A board
PCB# 250446-01	Minor revisions to the #250442 board, 1541 A-2 board
PCB# 250446-03	Cost reduced 250442-03 board. The 1541A C/R.

For the 1541C:

PCB# 250448-01	Contains the track 1 sensor logic. The 1541B board.

For the 1541-II:

PCB# 340503	Cost reduced board. Termed the 1541-II board.

There might be others, but these we can confirm. There are 9 if you count the 1541-II board as a 1541 board, 8 if not.

$152) Location $0000 and $0001

$153) 65536 bytes

$154) Fred Bowen.

$155) The original message, as detailed in Question $13F was:

PRESS PLAY AND RECORD ON TAPE #2

Commodore found that people were pressing the play buttopn BEFORE the record button, which would prevent the record button from functioning in some cases. So, Commodore changed the message to:

PRESS RECORD AND PLAY ON TAPE

To circumvent the problem. Note that the VIC did not have 2 tape interfaces, so no cassette number was needed.

$156) 17 million (This information came from Dave Haynie)

$157) 4.5 million (This information came from Dave Haynie)

$158) 8: Word Processor
File Manager
Spreadsheet
Address Book
Scheduler
Calculator
Memo Pad
Telecommunications Package

$159) 80 coumns by 16 rows, 1200 characters on screen.

$15A) 6569-R5. What's funny is that this chip was manufactured after the Commodore 128 was introduced, so they used the 6569-R3 for the development of the Vic-IIe chip (8563 series), which is buggy. So, the newest PAL 64s have a better VIC than the C128.

$15B) 256 bytes.

$15C) The Commodore "Colt" PC.

$15D) The 1350.

$15E) As Commodore was either still developing the (now more popular) 1351 mouse or the 1350 was designed as a lower cost alternative, this mouse could only emulate a joystick. When you rolled it up, the joystick "UP" pin was triggered. Likewise for the other directions.

$15F) It is a thin 40XX machine, meaning it could not be upgraded to an 80XX machine via chip swaps.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

What everyone should know about

Printer Interfaces

by Doug Cotton

With Commodore-compatible printers no longer being manufactured, many of us eventually face the need to use a non-Commodore printer with our C64 or 128. How easy or difficult proves to be depends a lot on how well we understand the devices that provide the connection to standard printers—printer interfaces. In this article we'll look at several of the popular interfaces that have been made, the features they offer, and the printers they support.

Before we dive into the interfaces, it would be helpful to know a little more about what they are designed to emulate—the functions found within Commodore and Commodore-compatible printers themselves.

Printer Interfaces: Supported Printers

Micrographix MW-350

- C.Itoh 8510
- BMC-80
- Epson: MX-80, MX-100, FX-80, FX100 and RX-80
- Gorilla Banana
- HP ThinkJet
- Mannesman Talley Spirit 80
- NEC 8023A
- Okidata Microline 82A, 83A, 84, 92, 93
- Panasonic KX-P1090
- Prowriter and Prowriter II
- Riteman
- Seikosha GP100A
- Star Micronics Gemini 10X and Delta 10

Xetec Super Graphix (all models)

- Axiom GX-100
- Blue Chip M120/10, M150/10, M150/15
- BMC 80 and 100
- Cal-Abco Legend
- C.Itoh 8510
- Diablo P10i, P12, P32
- Epson 9-pin models (Note: only the Super Graphix Gold has a separate MX-80 setting, as well as having an Epson LQ setting)
- Gorilla Banana
- IBM 9-pin graphics models
- Mannesman Talley Spirit 80, MT 160/180, MT 1600/1800
- NEC 8023
- Okidata Microline 82, 83, 84, 92, 93
- Panasonic KX-P1080, KX-P1080i, KX-P1091, KX-P1091i, KX-P1092, KX-P1093
- Prowriter
- Radix 10, 15
- Riteman
- Seikosha GP-100
- Star Micronics Gemini 10X, Gemini 15X, Delta 10, Delta 15, SD-10, SD-15, SG-10, SG-15, SR-10, SR-15, NX-10, NX-15, NX-1000 and NX-2400

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

The Basics

First, lets consider what a printer does. It prints, right? Yes, but what does it print? Characters and graphics—all delivered in the form of data via the serial bus. When we use a program that outputs to our printer, that program is sending a series of data bytes to the printer that informs the printer what it is to print on the paper. Part of what makes a Commodore printer unique is the way it interprets the data being sent to it. Certain characters merely print, while others instruct the printer to perform special functions. These latter characters are often called control characters, because they control the printer's special functions.

Characters that are merely printed are interpreted as PETASCII characters. PETASCII is Commodore's assignment of numbers, symbols and alphabetical characters to specific byte values, and its name derives from its original use on Commodore PET computers. The ASCII part of the name is common acronym for character codes, the American Standard Code for Information Interchange. The ASCII designation has been adopted by most printer manufacturers and predates Commodore's PETASCII. However, in the early days of personal computers, many companies used proprietary code systems of their, and Commodore was no exception here.

Commodore PETASCII differs somewhat from standard ASCII designations, and it's important to know this when trying to understand what printer interfaces do. Part of the job of a printer interface is to convert PETASCII codes to ASCII codes, since the latter is what you'll find on standard printers. Your interface manual will usually show what each of the specific PETASCII codes will produce; for ASCII codes, see your printer manul, or check out our article on cross-platform transfers in CW #15.

The control characters most important to maintaining Commodore compatibility are those codes that are understood by the 1525. While Commodore added new control characters in later printer models, most programs were written with the 1525 in mind. The following is a list of the 1525 control characters, along with the functions they perform:

CHR$(8)	Enter Graphics Mode
CHR$(10)	Line Feed
CHR$(13)	Carriage Return
CHR$(14)	Enter Double-width Mode
CHR$(15)	Enter Standard Character Mode
CHR$(16)	Perform Tab
CHR$(17)	Enter Cursor Down Mode
CHR$(18)	Enter Reverse Print Mode
CHR$(26)	Repeat Graphics
CHR$(27)	Specify Dot Address
CHR$(145)	Enter Cursor Up Mode
CHR$(146)	Exit Reverse Print Mode

To properly emulate a Commodore printer, the interface must deal with these control codes correctly, making the printer perform the functions that a Commodore printer would normally perform. Any interface that does so with your specific printer is a satisfactory replacement for a Commodore printer.

One final requirement is made of printer interfaces—they must accept and act upon the secondary addresses that the 1525 uses for setting various modes. The secondary address is a parameter that is part of the BASIC OPEN command, and is placed directly after the device number. Many times you may have seen the OPEN command for a printer without a secondary address:

```
OPEN 4,4
```

If no secondary address is included, the 1525 printer assumes that Cursor Up Mode should be used (this mode is the one that contains only uppercase letters and graphic symbols). Cursor Up Mode can also be selected by including a secondary address of zero (0):

```
OPEN 4,4,0
```

Compatibility Note

Most of the 9-pin printers made in the last few years emulate the Epson FX series and IBM Proprinter series, while most 24-pin printers emulate the Epson LQ series and IBM Proprinter E24X. While current interfaces do fine with text on 24-pin printers, graphical printouts generally come out vertically stretched.

If you have a 24-pin printer and your interface doesn't support Epson LQ or IBM Proprinter (and most do not), expect to have this problem with old programs that print graphically, such as *The Print Shop*. GEOS is an example of a program that gets around this problem by having its own printer drivers which support newer printers. To maintain compatibility with old programs, 9-pin printers are a safer bet.

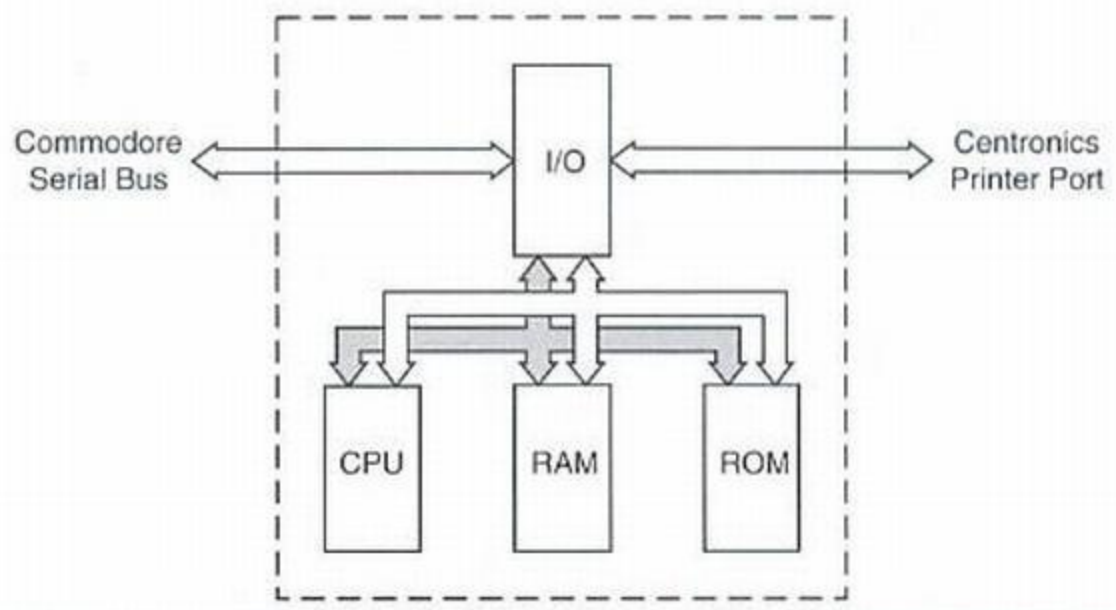
Looking back at the control codes, you'll see that sending a CHR$(145) while printing will also put the printer into Cursor Up Mode. The tables on the last page of this article show the secondary addresses used by Commodore and Commodore-compatible printers. A second table shows the secondary addresses that some of the common printer interfaces allow.

Other Features

Many of the interfaces provide even more extensive features than you'll find in most Commodore and compatible printers. One of

Printer Interface Hardware Overview

The operation of a printer interface requires four main components: I/O for interfacing to the host computer (Commodore Serial Bus) and the target printer; a microprocessor (CPU), RAM and ROM. The ROM contains the control program that controls signals which communicate with the computer and printer, and also contains routines and tables for converting between PETASCII and ASCII. The RAM is used for temporary storage, and can also be used as a buffer.



http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

the most important features is the inclusion of secondary addresses to enter a Transparent Mode. While the job of a printer interface is often to provide both signal and code conversions, it is often desirable to avoid the latter. Many programs have their own printer drivers that can produce much better results on non-Commodore printers. But to do so, the printer drivers must send codes to the printer without any translation by the printer interface. Many printer interfaces supply a hardware switch for Transparent Mode, but this switch almost never needs to be set—almost any software that has printer drivers that can take advantage of this mode will open the file with the proper secondary address needed to place your interface into this mode. While interfaces also contain many other features, many users never make use of these. So the most important things you'll need to know about a printer interface are those things we've covered here. Make sure it supports your printer, set the dip switches, and start printing.

Commodore & Compatible Printer
Secondary Addresses

Secondary Address	VIC-1525 MPS-801/803 Star NX-1000C	CBM 1526 MPS-802	1520	MPS-1000	Okimate20 Okidata 120	Function
0	■	■	■	■	■	Uppercase/Graphics w/Auto LF
1		■		■		Print Using Custom Formatting
2		■				Set Custom Formatting
3		■		■		Hex Dump
4		■		■		Transparent w/Auto LF
5		■		■		Transparent (no Auto LF)
6		■	■			Transparent (Text uses Interface Font)
7	■	■		■	■	Lowercase/Uppercase w/Auto LF
8		■		■		Lowercase/Uppercase w/Auto LF
9		■		■		Lowercase/Uppercase w/Auto LF
10		■		■	■	Reset Printer

Commodore Printer Interfaces
Secondary Addresses

Secondary Address	Xetec SuperGraphix			MicroGraphics	Cardco		Function
	Jr	Sr	Gold	MW-350	Card?B	Card?+G	
0	■	■	■	■	■	■	Uppercase/Graphics w/Auto LF
1	■	■	■	■	■	■	Uppercase/Graphics (no Auto LF)
2		■	■				Uppercase/Graphics using Interface Fonts
3	■	■	■	■		■	Hex Dump
4	■	■	■	■	■	■	Transparent w/Auto LF
5	■	■	■	■	■	■	Transparent (no Auto LF)
6	■	■					Decimal Dump
6			■				Transparent (Text uses Interface Font)
6						■	Character Mode (All Chars. use Interface Font)
7	■	■	■	■	■	■	Lowercase/Uppercase w/Auto LF
8	■	■	■	■	■	■	Lowercase/Uppercase (no Auto LF)
9		■	■				Lowercase/Uppercase using Interface Fonts
10			■				Decimal Dump
11		■	■				Font Download
12		■	■				C64 Hires Dump
13		■					Uppercase/Graphics Text Screen Dump
14		■	■				Lowercase/Uppercase Text Screen Dump
14			■				Banner Channel
15	■	■	■	■			Command Channel
16			■				Directory Channel
17			■				Picture Channel
18			■				Font Channel
19			■				User Channel
20+	■	■	■	■	■	■	Lock Secondary Address

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

COMMODORE WORLD

The only real magazine for C-64/128 users

For more than two years, Commodore World has empowered C-64/128 users by providing the latest news and information on the world of Commodore computing. Through our staff of leading experts like Maurice Randall and Gaelyne Gasson, we keep you in touch with new technologies and further explore those features which have made the Commodore great! Subscribe or renew today!

Call 1-800-638-3263

and subscribe or renew now!

Please begin my subscription to Commodore World as soon as possible!

Subscriber Information

Name: _____

Address: _____

City: _____ State/Prov. _____ ZIP/PC: _____

Country: _____ Phone: ( ) _____

One Year Subscription (Eight Issues)

United States.....$29.95 Canada & Mexico.....$35.95

Europe (EC Only).....$45.95 Other Foreign.....$57.95

Back Issues:

Single issues $4.95 each plus $2.00 shipping. Three or more back issues $4.00 each plus $1.00 each for shipping and handling.

Payment Information

❑ Bill me later (one year subscriber only)

❑ I've enclosed a check or money order in U.S. Funds

❑ Bill subscription to my credit card: (Check one)

❑ Visa ❑ MasterCard ❑ AMEX ❑ Discover

Card Number: _____ Exp. Date: _____

Signature: _____

Mail payments to:

CW Subscriptions
c/o Creative Micro Designs, Inc.
P.O. Box 646
East Longmeadow, MA 01028

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

Cautious Market Decisions

This Show is Brought to You
as the Third and Final Installment
in Our **"CMD Series"**
Produced by K. Dale Sidebottom

Announcer/Host: Hello, everyone, and welcome to our show. *Cautious Market Decisions* is the program that discusses the buying decisions you REALLY care about! Our guest today is Patricia, who is agonizing over a serious computer purchase.

Patricia, for the sake of our audience, please tell us about your problem.

Pat: Well, I own a Commodore and... well...

Host: My, that *is* a problem!

Pat: No, no! You don't understand! I love my Commodore and I'd like to keep it!

Host: Well, then...what's the problem?

Pat: I've had it for over ten years! I have never even owned a *car* for ten years! Maybe it's time for a change.

Host: I can see that this is a serious dilemma, and to help you resolve it, we have with us the world-renowned Dr. Fieldbutter, an I.C.U. specialist!

Pat: I.C.U.?

Host: Yes, he counsels Indecisive Computer Users.

Pat: That's me, I...I guess.

Host: We'll go directly to his office and you can begin your session immediately.

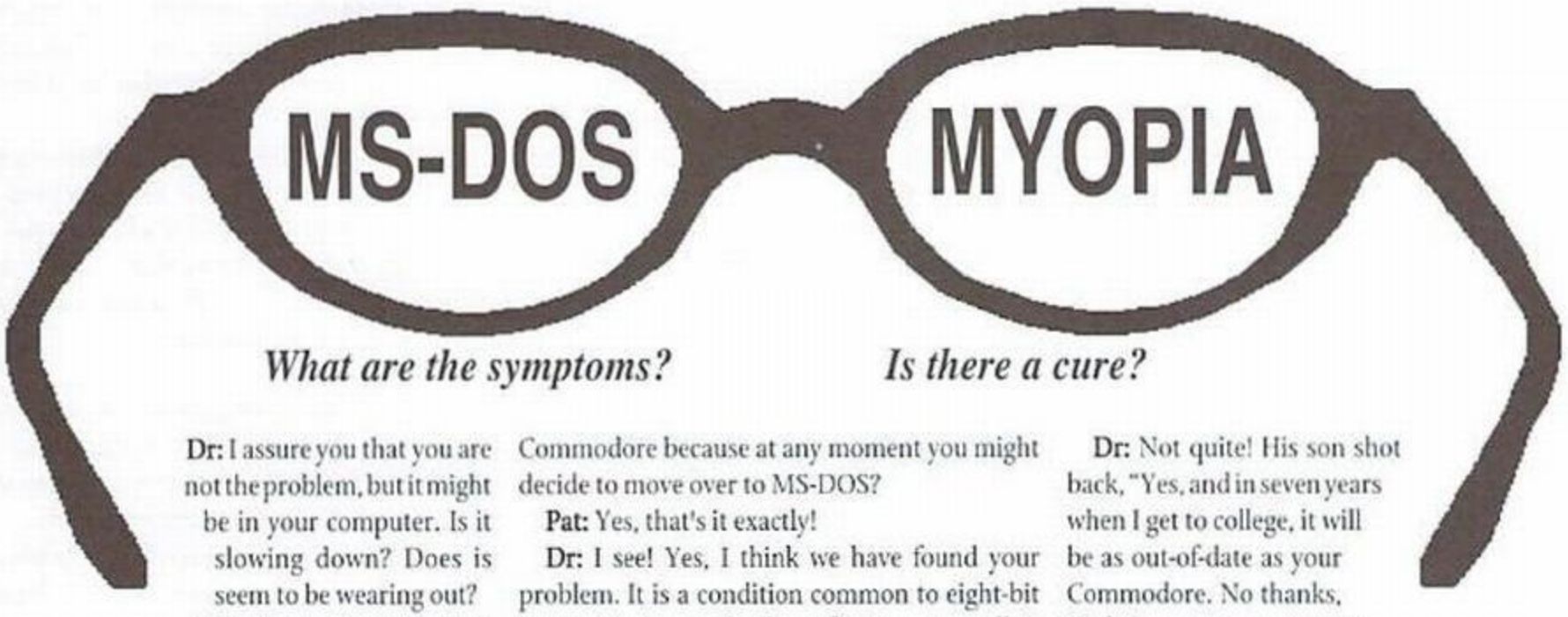
Doctor: Hello, Patricia, please be seated. How can I help you?

Pat: Dr. Fieldbutter, I've owned my Commodore for many years, and in many ways, it's like an old friend. I used to be thrilled by everything it could do.

Nowadays, I sit down already thinking about all the things I want to accomplish. I boot up my first program, and while my disk drive is going...grind...grind...grind..., my mind is going zip-zip-zip! I don't know whether the problem is in me or in my computer, but I am so frustrated that I am seriously thinking about switching to MS-DOS!

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/



Dr: I assure you that you are not the problem, but it might be in your computer. Is it slowing down? Does is seem to be wearing out?

Pat: Oh no, Doctor. It is so dependable. It works as if it were new!

Dr: If that is so, then your dissatisfaction appears to stem, not from a *decrease* in performance, but rather from *increase* in expectations. This is quite natural in an experienced user.

Pat: Oh, thank you, Doctor. What should I do about it?

Dr: Well, if you are going...grind...grind... grind...and want to go zip-zip-zip, I suggest that you buy a Commodore compatible hard drive.

Pat: But Doctor, that costs nearly $300! That's a lot of money to spend on a...

She was interrupted by loud laughter. The good doctor was holding his sides as tears began to stream down his face. He struggled to regain his composure.

Dr: You are so funny!

Pat: I am?

Dr: Oh yes! First, you said that you were seriously thinking about buying an MS-DOS computer, and then you pretended to believe that $300 was a lot to spend on your...(more laughter). I must write this down. I want to remember to tell it to Dr. Doss!

Patricia tried to pretend her humor had been intentional; yet she still wanted to defend herself.

Pat: But Doctor, if I am going to upgrade my Commodore, I should also purchase a SuperCPU to speed up my programs and a RAMLink to provide the extra memory that will be needed. However, all three of these items together would cost nearly $750! I just don't feel comfortable spending that kind of money on a computer I may soon be selling!

Dr: How long have you contemplated buying an MS-DOS computer?

Pat: I've been wrestling with this decision for two years! It's driving me crazy!

Dr: Let me see if I understand you fully. For two years you have held off upgrading your Commodore because at any moment you might decide to move over to MS-DOS?

Pat: Yes, that's it exactly!

Dr: I see! Yes, I think we have found your problem. It is a condition common to eight-bit users. In the medical profession, we call it *MS-DOS Myopia*!

Pat: What's that?

Dr: It is a near-sightedness produced by a misunderstanding of the MS-DOS market.

Pat: But, Doctor, what is the cure?

Dr: The best cure might be to talk to one of my Patients. He is paying me $100 per session to pour out his frustration because the computer he's already purchased has again decreased in price another $100!

Pat: Doctor, what are you saying?

Dr: That for MS-DOS users, spending $300 on something that will be relatively worthless in six months to a year is as common as rain.

Pat: I'm feeling even worse, not better!

Dr: Patricia, let me tell you about my nephew. He is also a Commodore user. His name is Dale Sidebottom.

Pat: Yes, I've heard of him. Recently he's been writing a series of articles on the relationship between the Commodore community and CMD.

Dr: That's the one. Well, recently his 11-year-old son asked him to buy a "real" computer so that he could do his homework like other kids in his class.

Pat: Doesn't Dale use a laser printer with his Commodore? That should make the homework look nearly professional.

Dr: Well, that's what he thought, too. But his son informed him that other kids did their homework in color!

Pat: Really!

Dr: My nephew explained to his son that if he wanted a new computer, it would have to come from money set aside for his education. For about $3000, they'd be able to get him a computer equal to his classmates.

Pat: That should have pleased his son very much.

Dr: Not quite! His son shot back, "Yes, and in seven years when I get to college, it will be as out-of-date as your Commodore. No thanks, Dad. I'm saving my money for college!"

Pat: Smart kid! I guess today even an eleven-year-old realizes that any computer with a few years on it is in the same boat as the Commodore. The big software companies are all writing programs for people willing to spend the big bucks!.

Dr: Precisely.

Pat: Doctor, I just want to make the *right* decision!

Dr: My dear, how can you possibly make the *wrong* decision? Will the world be saved or lost if you choose Commodore over MS-DOS or Macintosh over Amiga? Every computer has advantages and drawbacks. What is important is that you make the decision that is right for ***you***!

Remember that when I asked you about your problem, you never mentioned anything your Commodore couldn't do. If you want something that your present computer cannot give you, then you should consider changing platforms. On the other hand, if your main concern is simply for greater efficiency, then you should seriously consider upgrading!

Pat: But it all seems so complicated!

Dr: Then let me simplify it. Let's say you own a Cape Cod home. It has become too small for your needs. You can either remodel it, or buy a new one! Either choice is "right," but which is *right* for you?

Pat: If I really love the home I live in, it would be best to expand it. And cheaper, too!

Dr: Then your decision is made much easier. You're very fortunate that you now have a choice. Until recently, a Commodore "remodel" option simply did not exist.

Pat: You must be kidding!

Dr: Prior to August of 1996, I would never have recommended that an experienced user should upgrade a Commodore. But now with the

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

SuperCPU, you have all the tools needed to create an significantly advanced home computer system. You also have the *possibility* of an even greater compatible computer in the near future.

Pat: I feel very lucky! This is a great time to own a Commodore!

But I was surprised when you suggested that I buy a hard drive. Do many MS-DOS computers have hard drives?

Dr: Nearly 100%. The same is true of Macintosh and Amiga.

Pat: It may sound crazy, but I've owned a Commodore for ten years and no one ever told me that it needed a hard drive. In fact, I was always told the opposite. It seems like Commodore users just don't buy hard drives.

Dr: On the contrary, they buy millions! They buy MS-DOS hard drives, Macintosh hard drives, and Amiga hard drives. But true to their early training, they seldom buy hard drives for their Commodores.

Pat: That is so sad! Why do you think this is happening?

Dr: I believe there are two very practical reasons. First of all, even determined "dinosaurs" like my nephew believed that one day the Commodore would die. After all, if the old ones are wearing out and none are "being born," then it must eventually disappear. Why push higher-priced hardware on those who must ultimately switch to another platform anyway?

Pat: But that's no longer true! If CMD's new computer venture is successful, then the C64 could live for another generation!

Dr: Yes, but this unexpected turn of events is so recent and radical that perhaps some of those "dinosaurs" are having difficulty negotiating the turn.

Pat: That's understandable. What's the second reason?

Dr: Imagine you are greeting a new user who just bought a "complete" system for $50 at a yard sale. At what point in time do you inform him that he needs a $300 hard drive!

Pat: Ouch! I see what you mean.

If I were an officer in my user group, could you give me any advice that I might use to turn him in the right direction?

Dr: Simply plant a seed! Tell that new user, "You have a terrific system, and it will serve your needs for years to come. However, I must warn you that the time will come when your *thirst for knowledge* will be replaced by a *thirst for accomplishment*. When that day comes, you will have grown into an experienced user. I want to reassure you that, for a reasonable investment, your Commodore can grow right along with you! Anytime you'd like to know more, I'll be happy to share it with you."

Pat: I can do that. But how do I convince them that it is a "reasonable investment?"

Dr: Patricia, what happens if you invest fifty cents in a candy bar and eat it? Now your money is gone and your candy is gone. Have you wasted your money?

Pat: No, the enjoyment was worth fifty cents, especially if it was chocolate! If not, I wouldn't have made the investment.

Dr: Precisely. But did you know that computer purchases work the same way? Nothing lasts forever! It will either wear out or, more likely, be superceded by a similar product. This is why we refer to computer purchases as a "depreciating investment."

Now, in order for you to feel good about such an investment, you must to come to terms with its temporary nature. You need to decide what you will allow for depreciation. I recommend to my patients that they use a personal depreciation allowance of at least a dollar a day.

Pat: How does that work?

Dr: Let's say you decide to buy a SuperCPU and use it for a little over six months. You bought it for $200 and used it for 200 days. If you then decide to change platforms, you have wasted nothing! By your own accounting, your investment has depreciated to zero. But, if you keep your Commodore, you'll now use the SuperCPU for *free*! It's all "icing on the cake!"

Pat: What do I tell the member who says that no matter how much we upgrade, the Commodore will never be as powerful as MS-DOS?

Dr: Funny you should ask that. My greatest criticism of the MS-DOS market is that it forever encourages people to hunt rabbits with cannon!

Pat: Sorry, Doctor, but you lost me!

Dr: Does you husband hunt?

Pat: Yes, he does and I hate it! Every year he goes rabbit hunting with a gun that he inherited from his grandfather.

Dr: Let's say that he decides to upgrade his firepower and buys a small cannon!

Pat: Let me see if I get the picture. Instead of sending his dog into the thicket, he just blows the whole thicket to hell! If a rabbit dashes across the field and he can land a volley anywhere within 30 yards, that hare is "hamburger!"

Dr: Precisely

Pat: But that's ridiculous! My husband would feel silly doing such a thing!

Dr: Yet, that is what *millions* of Americans are doing! They buy high-priced, high-powered, high-end business machines designed to "hunt big game" and then take them home to chase "rabbits."

Pat: Yes, I see what you mean!

But a friend of mine recently bought a complete MS-DOS system with a pentium chip and all the software she needed to get started for $1500. Is that a good price?

Dr: Probably so, but remember...that is simply where her investment *started*. If we were to apply our depreciation allowance of a dollar a day, it would require four years for that investment to depreciate to zero. Do you think that system will satisfy her needs for four years?

Pat: Probably not.

Dr: It is also interesting to note that the market depreciation is usually 50% in the first year. So the market value of her MS-DOS system will probably drop $750 in the first year alone.

Pat: Do you mean that I can fully upgrade my Commodore for the same amount that she will lose in first-year market depreciation on an MS-DOS "*starter kit*!"

Dr: I might have expressed it differently, but let's remember that the computer should be viewed neither as a *toy*, nor as a *trophy*, but rather as a *tool* which we should seek to use wisely. On the one hand, some might say that operating a Commodore without a hard drive will waste resources; on the other hand, so will...

Pat: ...Hunting rabbits with a cannon!

Dr: Precisely.

Pat: Oh, thank you, Doctor. You've helped me so much!

Host: Patricia, what have you decided?

Pat: I'm going to upgrade my Commodore and wait to see how CMD makes out. If I decide to leave Commodore after two years, I can do so knowing that my investment has depreciated to zero. If, on the other hand, my new purchases can be used with CMD's new computer, I will feel like a genius! I really think that I will be using Commodore and CMD products for many years to come!

Host: Thank you for being today's guest on *Cautious Market Decisions*.

Pat: Thank you for inviting me!

Host: Dr. Fieldbutter, do you have any last thoughts to share with us as we close today's program?

Dr: I recall the words of wisdom spoken by the great *Confucius of Cyberspace* in regard to homes having more than one computer.

Host: And they are?

Dr: "Where your hard drive is, there will your heart be also."

Host: Words to live by, certainly! Thank you, Doctor.

That wraps up our show for today. Thank you for being with us. *Goodbye, everybody*!

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

Paxtron CORPORATION

COMMODORE CHIPS AND PARTS

We also carry Amiga parts, Motherboards, Power Supplies and all surface mounted ICs

Paxtron CORPORATION

Upgrade Chips

6510, 6526, 6567,6569, 6522, 8502, 8562, 8563, 8564, 8721, 8722, 325302, 390059, 251968 ..... $8.95
901225, 901226, 901227, 906114PLA.. $6.95
251715, 251913, WD1772 ..... $10.95
314972-03 (C128 ROM Upgrade) .. $24.95

Motherboards

1541 (NEW) Alps Assembly $12.95
1541 (Refurb) Alps Assembly $8.95
1541 (NEW) Newt. Assembly $12.95
1541-II $14.95
1571 (NEW) $16.50
C-64 (Refurb./tested) $21.95
C-64 (untested, as is, all chips) . $17.95
64C (NEW) ..... $
C-128 (NEW) $34.00
C-128-D (NEW) $34.00

Diagnostics & Manuals

Commodore Diagnostician: Guide to diagnose & fix C64/128/1541 .... $6.95
Manuals: 1084,1581,1571,C64,C128 Call

Floppy Disk Drives

1541 (Refurbished) $29.95
1571 (Refurbished) $39.50

Miscellaneous

128-D Keyboard (NEW) $19.95
C-64 Keyboard $14.95
Monitor Cables ..... Call
1541/1571 Alignment Kit $15.95
1084S Motherboard w/ Flyback $69.95
1084S Power Supply Board (Refurb.) $29.95
C-64 Cabinet (Top/Bottom) $12.95
Commodore Joystick (Capt. Grant) $2.95
256 x 1 (41256) $3.39
1541 Serial Cable $4.95
Video Cable $5.95
Verbatim 5.25 SS/DD Disks(10 Pak) . $1.99
Amiga A500 (Rev.3) PCD NEW $49.95

Power Supplies

(All Power Supplies are NEW)

C-64 non-repairable $14.95
C-64 repairable $19.95
C-64 Heavy Duty (5.2 amps) $39.95
C-128 Heavy Duty (5.2 Amps) .. $39.95
5.2 amps for Ram Expander Units $39.95
1541II external 110 volts $7.95
1581 external 110 volts $7.95
1084S Flyback (Phillips) $24.95
1084-D1 Flyback $35.95
1084 Flyback (Daewoo) $35.95
Str54041 for 1802C Monitor $12.95

- **1084S MOTHERBOARD WITH FLYBACK TRANSFORMER:** This new CBM board will cure 90% of 1084S problems. Simply switch the PCB and your monitor problems are solved! This motherboard with factory mounted flyback, is the exact replacement and works with all 1084S monitors. It is also very easy to install **$69.95**
- **CD32 MOTHERBOARD:** Contains all chips(Lisa, Alice, Paula, 68020-16, ADV101) except the 512K memories **$89.95**
  With all memory **$109.95**
- **COMMODORE 1976 SCIENTIFIC CALCULATOR:** Save a piece of the past. Brand new with charger and manual **$8.95**

Monthly Amiga Computer Specials

A500 COMPUTER with power supply and latest chips (eg: 8372 Agnus, 204 O/S). Includes your choice of the following software/books: Starter Kit (Inc. Kind Words, Deluxe Paint II) or Deluxe Kit. Also includes free Amiga Troubleshooting Guide ($7.98 value), 90 day warranty, tested and ready to go.
Fantastic price..... $119.95
Options: A501 1/2 meg expansion memory board installed add $10.00 • With 3.1 O/S ROM add $48.50 • PAL unit with 220V power supply add $29.00

A3000 Computer (unassembled) $439.50
Includes: 16 MHz motherboard with 2 MB RAM, new power supply, new 880K floppy drive, daughter board, mouse, full A3000 service manual, user manual, all cabling. 90 day warranty. Contact us about our additional A3000 options.

WE'RE ON THE INTERNET! COME VISIT OUR HOME PAGE AT: www.paxtron.com

Paxtron CORPORATION
28 Grove Street
Spring Valley, NY 10977

ORDERS 800-595-5534 • 800-815-3241 • 888-PAXTRON
Info 914-578-6522 • FAX 914-578-6550
E-Mail for orders & correspondence:
paxtroncorp@rcknet.com

Hours: 9AM - 5 PM EST
Add $6.00 for UPS Charges

We gladly accept:

CW & RUN BACK ISSUES

For years, *RUN* Magazine provided Commodore Users with a great source of information, and now CMD has given you *Commodore World*. Don't let this valuable information slip away—fill in the voids in your library now!

RUN Magazine Back Issues

Any 3 issues for $12.00, any 6 for $18.00, or any 12 for only $24.00

RMJAN89	January 1989	RMJUN90	June/July 1990
RMFEB89	February 1989	RMDEC90	December 1990
RMMAY89	May 1989	RMJAN91	Jan/Feb 1991
RMJUN89	June 1989	RMJUN91	JuneJuly 1991
RMJUL89	July 1989	RMJAN92	Jan/Feb 1992
RMAUG89	August 1989	RMMAR92	March/April 1992
RMSEP89	September 1989	RMMAY92	May/June 1992
RMOCT89	October 1989	RMJUL92	July/August 1992
RMSP89	Special Issue 1989	RMSEP92	Sep/October 1992
RMJAN90	January 1990	RMNOV92	Nov/December 1992
RMMAY90	May 1990		

Shipping: 3-6 issues - U.S. $3.00, Canada $5.00, Foreign $15.00; 12 issues U.S. $5.00; Canada $7.00; Foreign $20.00.

Commodore World Back Issues

$4.95 each, or any 3 for only $12.00

CW1	Commodore World Issue 1	CW11	Commodore World Issue 11
CW2	Commodore World Issue 2	CW12	Commodore World Issue 12
CW3	Commodore World Issue 3	CW13	Commodore World Issue 13
CW4	Commodore World Issue 4	CW14	Commodore World Issue 14
CW5	Commodore World Issue 5	CW15	Commodore World Issue 15
CW6	Commodore World Issue 6	CW16	Commodore World Issue 16
CW7	Commodore World Issue 7	CW17	Commodore World Issue 17
CW8	Commodore World Issue 8	CW18	Commodore World Issue 18
CW9	Commodore World Issue 9	CW19	Commodore World Issue 19
CW10	Commodore World Issue 10	CW20	Commodore World Issue 20

Shipping: U.S. and Canada $2.00 for first issue, plus $1.00 per additional issues.; Foreign $5.00 per issue.

TO ORDER CALL 1-800-638-3263

Computer Bargain Store

(801)466-8084

Specializing in NEW and USED Commodore Hardware, Software and Accessories at excellent prices.

Send $1.00 for a HUGE list of products. Office Hours:
11:30 - 6:30 MST. Visa, MC, Discover and American Express accepted.

3366 South 2300 East, Salt Lake City, UT 84109

CMD

AFFORDABLE • FAST • DEPENDABLE

Call Today 1-800-638-3263

Our Team of Technicians are Among the Most Qualified in the Industry!
Why Settle for Anything Less Than the Best?

We repair the following equipment: Commodore C-64, 64C, SX-64, C-128 and C128-D computers; 1541, 1541C, 1571 and 1581 Disk Drives plus CMD Devices. JiffyDOS Installations a specialty. All repairs warranted for 30 days. Minimum charge $35.00 plus parts and return shipping. You must contact CMD for authorization before sending any equipment.
Creative Micro Designs, Inc. P.O. Box 646 E. Longmeadow, MA 01028

http://www.oldgamesitalia.net/
http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

Just For Starters

by Jason Compton

MEMORY MATTERS

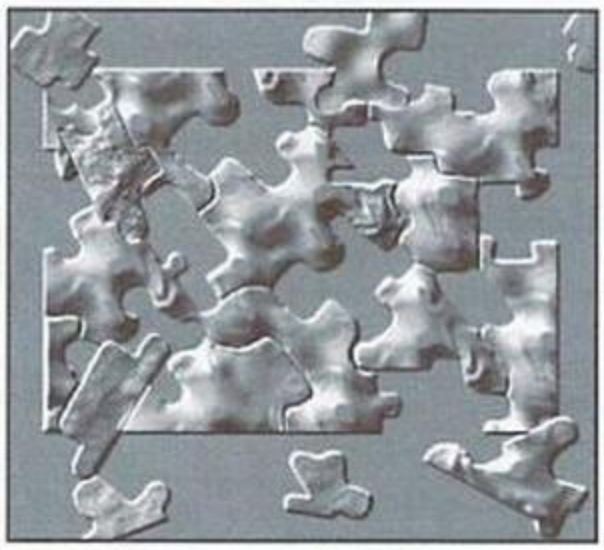
The 64 is a very flexible computer, designed to work under a variety of conditions. As long as you can get power and some sort of TV or monitor, you can operate a 64. Even under the hood, a 64 can function when some of its components are damaged or missing—you can remove the SID chip, the unit that makes sound and generates random numbers, and a 64 will still (mostly) work.

But some things are absolutely essential to the 64's (or any computer's) operation, and one of those things is memory. As the name implies, the Commodore 64 has 64k of memory, or 65,536 locations (bytes) in which the computer can store data. What you do with that memory—and what you and other programs can do with it—is partially up to you and partially up to the design of the computer itself.

BASIC Bytes Free?

One of the first things people wonder about when they first start thinking closely about what their 64 is really doing is the BASIC startup screen. After all, the Commodore 64's name, its manual, even its startup screen all tell you that it has 64K of memory—why, then, are there only these 38911 bytes free? Who's stolen the rest of your memory?

Relax, it's all still there. A programming book like the C64 Programmer's Reference Guide or Mapping the 64 will tell you byte by byte what's going on in there, but for our purposes, a quick overview is all that's necessary.



The thing to remember about memory is that it's not just for your use as program storage, but that all of the various resources of the computer need memory to communicate with you and with each other.

Look back at that startup message again. That, too, takes up memory! Each letter on a 64's screen takes up a byte of memory. Each letter color takes up half of a byte. This space is taken up whether or not you can see a letter there, the computer has to store something in its place. What it thinks of is a space character with the color of the background. Speaking of the background, the foreground and border color you see takes up a byte each as well.

BASIC itself takes up some memory as well—8K, or fully an eighth of the 64's memory. That 8K is made up of the BASIC keywords (RUN, LIST, NEW), etc, and the instructions the 64 needs to know to actually make those things happen. You might be interested to know that the BASIC found on virtually all Commodore machines was originally written by Microsoft—yes, THAT Microsoft. In fact, Microsoft made their first money writing BASICs for computers in the late 70s.

Other areas in memory are needed to handle the Kernal (another 8K, which contains the operating system for the 64 that sits below BASIC) and to deal with input and output from the various devices such as the keyboard, the joysticks, and any other peripherals that may be hooked up to the computer. Once all of those things are taken into account, you're left with just under 39,000 bytes to work with in BASIC.

Communicating With Memory

By now you should realize that just about anything you can do on your 64 will affect memory, and probably more than once, too—after all, just typing a character changes the screen memory, and for the keyboard to tell the screen memory about the new input, it had to use another area of memory. To make direct changes, or to look around, the POKE and PEEK commands come in handy. It is generally much less convenient to make wholesale changes to memory from BASIC than it is from a machine language monitor, but for certain purposes it is quite useful. For example, have you ever typed in a program from Commodore World? All of the listings are in BASIC but many contain mostly DATA

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

statements. Those DATA statements are POKEd into memory to create a new program. That's just one practical use of POKE.

Most single locations of memory are not easily modified from BASIC to produce a visible result, but the commands listed early in your user's guide are—those to change the screen foreground and background. At locations 53280 and 53281, the 64 pulls the information for those colors. Using the simple POKE 53280,X (where X is your desired color number) you can change the background.

PEEK differs from POKE in that it is not a direct command (one you simply type in like RUN or LIST) but it acts like a mathematical operation. You use the same format you would to get the 64 to perform a logarithm or a sine function. You have to PRINT PEEK(address) to see a result, and the result is the byte stored in the particular location you indicate inside the parentheses.

There's Always A "But"

Of course, 38911 is not the final word on available memory. If you think about it, your floppy disks store many times more than that. Of course, sometimes you store files much smaller, like short letters or BASIC programs. But certainly multi-disk games or heavy-duty utilities must have more to work with than that space? They certainly do. Part of the secret lies in the BASIC and Kernal discussed above. When you run a commercial game, for example, it likely does not use BASIC. But having so much memory taken up by something you're not using is wasteful, isn't it?

It certainly is. By "banking out" BASIC, programs are able to take advantage of the space that would otherwise be occupied by a totally dormant BASIC interpreter. This gives them additional memory which can store graphics, sound, or program code.

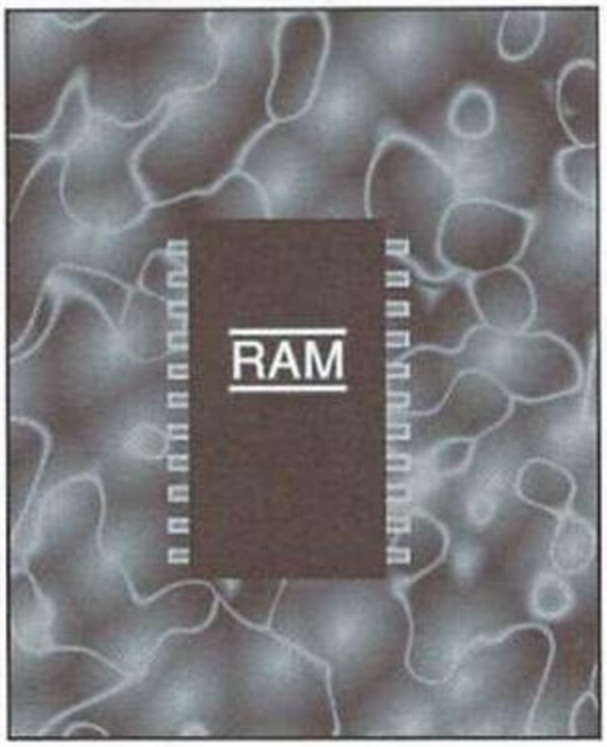
A more complex solution, but still possible, is to move deeper into memory, banking out the Kernal or even completely rethinking the way the 64 uses its memory. GEOS does the latter—the structure of GEOS' memory is entirely different than that of BASIC's. GEOS actually has less space available just for programs, but trades that off for a GUI and fast disk access routines, among the other things that GEOS does.

The 64K Wall

In the end, though, after all is said and done, there's only so much space available for the 64's use. It's a tried and true limit, it's part of the name of the machine, and for many users it's all they ever want or need. But there ARE ways to put more memory into a 64 system. None of them will give you more than the 38911 BASIC BYTES FREE we already discussed, however, because of the roundabout ways the 64 uses to access them. You may wonder "what's the point, then?" but there are some very practical ways to use extra memory on a 64 system.

There are four major options for RAM expansion. If you're a longtime reader of Commodore World you may recall this subject being discussed before, but I ask you to bear with me—most sources about RAM expansion on the 64 miss, in my opinion, the really relevant facts most people are looking for and need to understand before they make a purchasing decision. All of the options sit on the cartridge port in some way or other.

The first, and oldest, method is with an REU, or Ram Expansion Unit. These cartridge-port devices are typically found in four sizes. The new



CMD 1750 and 1750XL come in 512K and 2 megabyte versions, while the older Commodore units come in 128K, 256K, and 512K models. REUs use a special chip to move memory in and out of the 64 at very fast rates—much faster than the 64 is capable of doing without an REU. The REU can also be used from BASIC as a "RAM disk", allowing you to load and save files rapidly to a large virtual disk. GEOS can take advantage of an REU by storing certain system files in one of its 64K banks, and using the rest of the space to create a virtual disk (or two, in the case of the 1750XL). An REU can be used from programs as rapid storage space. Productivity software and even a few games avail themselves of an REU when it is more desirable to have the ability to store and quickly move data around without having to resort to disk space.

GEORAM and BBGRAM are commonly referred to as "Memory Expansion Units", and if you're like me you're wondering how an "MEU" is different from an "REU." The major difference stems from the design—these devices did not have the Commodore custom chip that made the REU so fast, so software designed for the REU (which is relatively plentiful relative to that specifically for the MEU) does not work. GEOS is of course an exception.

The RAMLink and the RAMDrive are known as "Virtual Storage Disks", or VSDs. Their job is much different. Unlike the MEUs and REUs whose primary function is to allow programs to take advantage of them to move data in and out of the 64 rapidly but offer disk-like storage as a secondary property, VSDs sole job is to be RAM disks. A RAMLink cannot be used by a text editor to expand the size of file you can edit. What it can do is load and save that text file with blinding speed. The RAMLink, the currently available and supported unit, can accomodate up to 16 megabytes of RAM. This memory can be split up into various sized chunks of disk space and from that point on act more or less exactly like a floppy or hard drive would. So programs specially tailored for an REU's specific abilities do not have any effect on a RAMLink—although a RAMLink will allow you to plug an REU into it. A RAMLink can be thought of as nothing more than a super-fast hard drive which happens to accomodate RAM chips instead of a physical hard drive.

The last, and newest option, is the RAMCard for the SuperCPU. The RAMCard is so far a rather unknown quantity which ships with exactly one purpose—to act like a VSD when used in conjunction with GEOS. It has the advantage over all of the other options in that it can be directly addressed by the powerful 20Mhz processor in the SuperCPU. This should have profound impact on development in the future.

So, if you come to the point where you feel you need additional RAM, you need to keep these things in mind. If you are programming and are finding the limitations of the 64's memory access troublesome, an REU is likely the best option. If you are frustrated by slow load and save times and have 1-16 megabytes of programs you feel would benefit by extremely fast access and a fully powered electrical backup, a RAMLink is probably for you. And if you want to catch the edge of the technology curve, the RAMCard is where it's at. GEOS can benefit from any of the devices outlined here.

It's all ones and zeros, as they say, when it comes to memory. And whether you've got 64K or a 16 megabyte RAMLink with a 2 meg REU plugged into it, we all get the same startup message—no 64 ever falls too far from the tree.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

CMD • HARDWARE • ORDERS: 1-800-638-3263 • SOFTWARE • CMD

FD Series 3.5" Floppy Disk Drives

FD-2000 (800K and 1.6 MB)	$179.00
FD Real-Time-Clock Option/Aftermarket Kit	$20.00/$29.00
Box of 10, High Density Disks (1.6MB)	$14.95
Box of 10, Enhanced Density Disks (3.2 MB)	$29.00

Miscellaneous Hardware

40-column CBM 1702 / 1802 40-column Monitor	CALL
80-column Monitors	CALL
Aprotek 3-Way User Port Expander	$30.00
Aprotek User Port Extension Cable	$19.00
C-64 Computer (Remanufactured, w/JD & PS)	$99.00
C-64C Computer (Remanufactured, w/JD & PS)	$119.00
C-64C Computer (New Motherboard & New rep. PS, JD)	$159.00
SX-64 Computer (Remanufactured w/JD)	$299.00
C-128 Computer (Remanufactured w/JD & PS)	$159.00
C-128 Computer (New Motherboard w/JD, New PS)	$229.00
C128-D Computer (Remanufactured w/JD)	$299.00
C128-D Computer (New Motherboard w/JD, New PS)	$329.00
C-64/64C PowerSupply (New, 1.7 Amp.)	$29.00
C-64/64C RepairablePS (New, 1.7 Amp.)	$39.00
C-64/64C Heavy Duty Repairable PS (New, 4.3A)	$59.00
C-128 RepairablePower Supply (New, 4.3 Amp.)	$55.00
C-128D Internal Power Supply (New, 4.5 Amp.)	$39.00
1541-II/1581/RLv1 Power Supply (New, 1 Amp.)	$25.00
CBM 1541 Disk Drive (Remanufactured w/JD)	$89.00
CBM 1541-II Disk Drive (Remanufactured w/JD)	$109.00
CBM 1571 Disk Drive (Remanufactured w/JD)	$119.00
CMD EX2+1 3-Port Cartridge Port Expander	$39.00
CMD EX3 3-Port Cartridge Port Expander	$34.00
CMD GeoCable II Print Cable 6ft./15ft.	$29.00/$34.00
CMD Sega-style Gamepad for C-64/128	$24.95
CMD SmartMouse (1351 Compatible Mouse)	$49.95
Flip'n'File 25 Disk Holder (5.25-inch.)	$5.95
Floppy Disks (25 pack of DSDD 5.25-inch.)	$10.00
Inkwell Light Pen Model 170C	$75.00
Monitor Cables	CALL
Panasonic KXP-1150 9-pin Printer	$169.00
Panasonic KXP-2023 24-pin Printer	$229.00

Utilities

Big Blue Reader V4.10 (SOGWAP)	$39.00
CMD Utilities	$24.95
JiffyMON-64 (ML Monitor)	$19.95

Languages & Compilers

BASIC 64 Compiler (Abacus)	$17.00
BASIC 128 Compiler (Abacus)	$25.00
Blitz! 64 Compiler (Skytes)	$30.00
Buddy 64/128 Assembler	$39.00
Cobol 64 (Abacus)	$17.00
Pascal 64 (Abacus)	$17.00

GEOS

Collette Utilities (Handy Geos Utilities)	$19.95
Desk Pack Plus	$29.00
Dweezils Greatest Hits (NewTools2,Stamp,Label128)	$30.00
FONTPACK Plus	$25.00
gateWay 64 or 128 (Specify Version)	$29.95
geoBASIC	$20.00
geoCalc 64/128	$40.00/$45.00
geoChart	$29.00
geoFAX	$39.95
geoFile 64/128	$40.00/$45.00
geoMakeBoot (Makes Bootable copies)	$12.95
geoProgrammer	$45.00
geoPublish	$40.00
GEOS 64 v2.0	$44.00
GEOS 128 v2.0	$49.00
geoSHELL V2.2 (CLI for GEOS)	$24.95
International FONTPACK	$25.00
Perfect Print LQ for GEOS (Laser-like output)	$49.95
RUN GEOS Companion	$20.00
RUN GEOS Power Pak I or II (Specify)	$20.00

Books

Anatomy of the 1541	$8.00
C-64 Science & Engineering	$8.00
C128 Computer Aided Design	$8.00
C128 BASIC Training Guide	$8.00
Commodore 64 Tricks and Tips	$8.00
Compiler Design & Implementation for the C64	$8.00
GEOS Programmers Reference Guide	$28.00
Graphics Book for the C-64	$8.00
Hitchhikers Guide to GEOS	$28.00
Ideas for Use on Your C-64	$8.00
Printer Book for the C64	$8.00
Mapping the C64	$8.00

MIDI & Sound

Digimaster	$34.95
SID Symphony Stereo Cartridge	$44.95
Dr.T's Caged Artist or AlgorythmicComposer	$15.00

Educational

Adventures w/ Fractions (ages 10-14)	$15.00
Expeditions (ages 8-15)	$15.00
Pre-Reading (ages 3-7)	$15.00
Spelling Bee (ages 8-13)	$15.00
The Glass Computer (ages 12+)	$15.00
The Market Place (ages 8-14)	$15.00

SuperCPU-64 Accelerator.....$199.00

SuperRAM Card (0/1/4/8/16MB)	$79/94/114/139/179
SuperCPU 64 w/SuperRAM	$259/274/294/319/358

HD Series SCSI Hard Disk Drives

HD-40 (40 MB)	$269.00
HD-170, 170 MB (Special Edition)	$319.00
HD-500, 500+ MB (Special Edition)	$439.00
HD-1000, 1 GB (Special Edition)	$539.00
HD-2000, 2 GB (Special Edition)	$649.00

RAM Devices

CMD 1750 512K REU	$99.00
CMD 1750XL 2MB REU	$139.00
RAMLink Base Model (OMB, No RAMCard)	$149.00
RAMLink w/1MB RAMCard (Special!)	$189.00
RAMLink w/4MB RAMCard (Special!)	$229.00
RAMLink w/16MB RAMCard (Special!)	$349.00
RAMCard RTC Option/After Market Kit	$10.00/$19.00
RAMLink Battery Back-up (Optional)	$24.95
Parallel Cable (RAMLink to HD)	$19.95

Productivity

Bank Street Writer	$12.00
Cadpak 64 (Abacus)	$22.00
Cadpak 128 (Abacus)	$25.00
Chartpak 64 (Abacus)	$17.00
Chartpak 128 (Abacus)	$25.00
Data Manager 64 (Timeworks)	$16.00
I Paint v1.5 (128, 80-col., 64K VDC)	$39.00
I Port v1.54 (128, 80-col., 64K VDC))	$29.00
Personal Portfolio Manager (Abacus)	$16.00
Pocket Writer 1 (64) Digital Sol.)	$35.00
Pocket Writer 2 (64/128) (Digital Sol.)	$65.00
Pocket Writer 3 (64 or 128) (Digital Sol.)	$70.00
Pocket Planner 2 or Pocket Filer 2 (Digital Sol.)	$35.00
RUN Productivity Pak I, II, or III (Specify)	$15.00
RUN Super Starter Pak 1541 or 1581	$20.00
RUN Works	$20.00
SEC Check Register 128	$50.00
SuperScript 128 (Precision)	$20.00
Suberbase 64 Version 3.01 (Precision)	$35.00
Superbase 128 Version 3.01 (Precision)	$35.00
SwiftCalc 64 (Timeworks)	$16.00
TWS 64 w/Speller (Busy Bee)	$29.00
TWS 128 w/Speller (Busy Bee)	$39.00
TWS Modules (HD/RL/Illustrator)	each $5.00

Telecommunications

Aprotek MiniModem C-24 (C= ready, 2400 baud)	$69.00
Aprotek Com-Modem Adapter (for ext. modem)	$19.00
Aprotek Com-Modem Adapter Cable	$9.95
Zoom V.34 Plus 33.6K bps FaxModem	$169.00
Zoom FaxModem w/Turbo232 & Cable	$199.00
Commodore 1670 Modem (1200 baud)	$14.95
Turbo232 Cartridge (Up to 115K baud)	$39.95
Modem (9-25) or Null-Modem Cable (9-9 or 9-25)	$9.95

Scanning & Video

Handyscanner	$249.00
Pagefox	$139.00
Video Digitizer	$189.00
Videofox	$89.00

Games

Atomino	$17.00
Ballistix	$13.00
Chomp!	$10.00
Cut Throats!	**$10.00**
Day in the Life of Prehistoric Man	$19.00
Escape Route	$19.00
Felony	$10.00
Frogger	**$10.00**
Grand Prix Circuit	**$10.00**
Guerilla	**$10.00**
Hardball	$10.00
Heavenbound	$19.95
Island of the Dragon	$19.00
Jordan vs. Bird: One on One	$10.00
Kings of the Beach	**$10.00**
Lions of the Universe	$19.95
Lords of Conquest	**$10.00**
Mainframe	$13.00
Mean Streets	**$10.00**
Menace	$15.00
Monday Night Football	$10.00
Rings of Medusa	$16.00
RUN C64 Gamepak or C128 Funpak (Specify)	$10.00
Skate or Die	$13.00
The President Is Missing!	$10.00
The Three Stooges	$10.00
Tie Break Tennis	$16.00
Total Eclipse	$10.00
Walkerz	$19.00
War in Middle Earth	**$10.00**
Where in the World is Carmen SanDiego?	$29.00
Where in Europe is Carmen SanDiego?	$29.00
Wings of Circe	$19.00

Novaterm

version 9.6

Join the Telecommunications Revolution... get on the Information Super Highway TODAY!

- **Easy-to-use — novice user configuration**
- Now supports **UUencode and UUdecode** and converts files on disk or in a buffer. Also ASCII <> PETSCII and PETSCII to Unix.
- Protocal support: **Zmodem up/download, resume (crash recovery), streaming to buffer**; Ymodem batch; **Ymodem-g**; Xmodem-1k; **Xmodem-1k-g**(to buffer); Xmodem-CRC; Punter; Kermit; WXmodem.
- Supports High Speed Interfaces like Turbo232 for speeds up to 230Kbps.
- Supports ANSI color/graphics, VT102, and VT52 in 80 col. Plus Commodore color graphics and ANSI color. **All emulation modules now load from one window.**

Now Just $29.95
(Specify 5.25" or 3.5" disk)

- New faster 80 column modes: **Soft-80 on C-64 (enhanced scrolling w/ REU); and 25- or 28-line C-128 VDC 80-col. mode.**
- **Use any memory device as a buffer** including: 17xx REU, RAMLink partition, GeoRAM, C128 VDC, BBGRAM, and internal C64 memory.
- New text capture features.Capture text on-line and store in any device; High-speed transfers directly into memory and now **retain buffer contents with battery/power backed RAM devices such as RAMLink.**
- Enhanced full featured **Text editor can now load/save files from the buffer** and has an integrated script compiler.
- Script language for automatic operations
- Simple BBS mode - dial-in downloading
- Supports **real-time clocks in CMD devices**
- All new user's manual

JiffyDOS

Increase Speed Up to 1500% while retaining 100% compatibility

64 System Computer & Drive ROM $39.00

Add'l Drive ROMs $19.00

128 system Computer & Drive ROM $49.00

Note: Computer Serial Number Required for C-64/64C Orders

COMMODORE WORLD

THE NEWS MAGAZINE FOR C-64 & 128 USERS

For more than two years, Commodore World has been keeping the C-64/128 market alive with up-to-date information from some of the brightest minds in the Commodore community. From beginner to expert, CW has something for everyone. Columns regularly cover: Programming, what's new, reviews, games, GEOS, telecom, projects and much more! Stop listening to everyone telling you what you can't do with a Commodore and see what the latest innovations can do for you!

Subscribe for only $29.95

Canada $35.95, EC Countries $45.95, Other Foreign $57.95

Shipping and Handling Charges

	Continental United States			AK,HI,PR	Canada	Foreign
Order Subtotal	UPS Ground	2nd Day	Next Day	UPS 2nd Day Air	Air Parcel Post	AirMail or UPS
$0.01 to $19.99	$4.75	CALL	CALL	$16.00*	$5.00	CALL
$20.00 to $29.99	$5.75	CALL	CALL	$17.50*	$7.00	CALL
$30.00 to $59.99	$6.75	CALL	CALL	$21.00*	$9.00	CALL
$60.00 to $149.99	$7.75	CALL	CALL	$29.00*	$12.00	CALL
$150.00 to $299.99	$11.00	CALL	CALL	$38.00*	$20.00	CALL
$300.00 to $799.99	$16.00	CALL	CALL	$42.00*	$25.00	CALL
$800.00 and up	$21.00	CALL	CALL	$55.00*	$38.50	CALL

UPS C.O.D. add $5.00 (US only)

* Other shipping methods available. Call for details.

POLICIES: CMD accepts: Major Credit Cards, Money Orders, COD and Personal Checks. Personal Checks are held 3 weeks. Customer is responsible for shipping charges on refused packages. Most items are stock, contact CMD for firm delivery. Returns for merchandise credit only within 30 days with prior authorization. Credits are less shipping, handling, taxes, customs, duties, and a 10% restocking charge. No refunds or credits on opened software. All prices and specifications are subject to change without notice. CMD Business Hours: (Orders) M-F, 9AM-5:30PM EST (Tech Support) M-F, 1PM-5:30 PM EST.

••• All Major Credit Cards Accepted •••

Mastercard • Visa • Discover • American Express

Creative Micro Designs, Inc.
P.O. Box 646
East Longmeadow, MA 01028
Info: (413) 525-0023
Fax: (413) 525-0147
Visit our Web Site at: http://www.cmdweb.com/

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

• • • SPECIALS • • •

SAVE $24 on CMD REUs & GEOS

512K CMD 1750

w/GEOS 64	$119.00
w/GEOS 128	$124.00

2MB CMD 1750XL

w/GEOS 64	$159.00
w/GEOS 128	$164.00

GEOS has been heralded by many as the single most important development for the Commodore 64 and 128 computers. On the other hand, GEOS has also been chastised for its slow performance when used with a floppy disk drive. With RAM devices like CMD's new 1750 and 1750XL, GEOS proves its worth. Don't miss your opportunity to get both at this special low price! Order GEOS 64 or 128 with a CMD REU before December 31, 1997, and save $24.00!

DSDD DISKS & HOLDER

Order 2 packages of our Double-Sided Double-Density 5.25-inch floppy disks (25 disks per package), and we'll throw in a free Flip'n'File 25 Disk Holder! Offer valid through Dec. 31, 1997, or while quantities last. Quantities are limited—act now!

50 disks plus 25-disk holder $20.00

BRAND NEW COMMODORE COMPUTERS & DISK DRIVES

CALL 1-800-638-3263

C-64

Computers

Commodore C64	$99.00
Commodore C64 w/JiffyDOS	$139.00
Commodore C64c	$129.00
Commodore C64c w/JiffyDOS	$169.00
Commodore 128	$229.00
Commodore 128 w/JiffyDOS	$269.00

C-128

Disk Drives

Commodore 1541-II	$99.00
Commodore 1541-II	$129.00
Commodore 1541C	$89.00
Commodore 1541C	$119.00

1541C

C-64C

1541-II

Also Available
Remufactured 1571 Disk Drives $119.00

All equipment listed above is factory new or factory refurbished by Commodore for resale as new and includes documentation, cables and other materials supplied by the manufacturer.

POWER SUPPLIES

C-64/64C (NEW STOCK 9VAC1A/5VDC 1.7A)	$29.00
C-64/64C (NEW 9VAC1A/5VDC 1.7A REPAIRABLE)	$39.00
C-64/64C HEAVY DUTY (NEW 9VAC 1A/5VDC 4.3A REPAIRABLE)	$59.00
C-128 (NEW 9VAC 1A/5VDC 4.3A REPAIRABLE)	$55.00
C-128D (NEW CBM INTERNAL)	$39.00
1541-II/1581 (NEW STOCK CBM)	$24.00
1571 (USED BUT THOROUGHLY TESTED)	$20.00
1541 (USED BUT THOROUGHLY TESTED)	$20.00

CMD Service Center

Reasonable Rates • Quality Work
Computer & Drive Repairs • Reset Switches
Keyboard Cleaning • Device Select Switches

CALL FOR AUTHORIZATION BEFORE SENDING ANY ITEM

You may now reach CMD on the Internet at:

WORLDWIDEWEB: HTTP://WWW.CMDWEB.COM/
EMAIL: (TECH) SUPPORT@CMDWEB.COM OR (SALES) SALES@CMDWEB.COM

Prices do not include shipping charges, and are subject to change without notice. All items subject to availability, call before ordering. See our main ad for shipping prices.

http://www.oldgamesitalia.net/
http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

HARDWARE IN REVIEW

CMD 1750 & 1750XL REUs

Creative Micro Designs, Inc., P.O. Box 646, East Longmeadow, MA 01028-0646, 1-800-638-3263.

How much RAM is "enough"? When you're talking about Commodore 64 and 128 computers, with as many kilobytes of RAM as you see in the model number, there are different ways you can answer that question.

A friend of mine, a devoted programmer of our Commodore machines, maintains that 64K is in many ways plenty. After all, 65,536 locations of memory provide for millions and millions of different states for the computer to be in-certainly a lot of room for exploration.

But from a more practical standpoint, sometimes 64K isn't all that much. A program can only get so big, a document can only get so long before it starts hitting memory limitations. The 64/128 architecture is tied very closely to the amount of onboard memory, but that doesn't mean that there isn't a roundabout way around the limit.

That's where Ram Expansion Units (REUs) come in. An REU adds banks of memory to your computer which the 64 can address in an indirect fashion. So while you don't instantly get more memory for BASIC or for your favorite applications, specially coded applications can gain benefit. Alternately, you can use an REU as a "RAM disk", a super-fast way to store files.

Commodore sold REUs in three varieties: the 1700, which added 128K to a 64 or 126, the 1764, which added 256K to a 64 (only), and the 1750, adding a full 512K to a 64 or 128. CMD's models use the Commodore REC, a special chip designed for high-speed RAM expansion as found in the original Commodore models. The CMD 1750 is a functional duplicate of the original 1750 (and the Super 1750 Clone from SSI), while the 1750XL takes the REU to a full 2 megabytes of memory, the maximum in the official REU specification.

Both units come in small game cartridge-sized cases and plug into the cartridge expansion port on your computer. 128 users need not worry about power draw, but 64/64C users are strongly encouraged to purchase a heavy-duty power supply for their computers.

Plugging an REU into your computer is at first a totally invisible modification. From BASIC, the easiest way to investigate the REU is with the included test tools, which will inform you (hopefully) that all is well with your system. Next, you may want to investigate RAMDOS, the program which allows you to treat an REU like a disk drive.

RAMDOS from Commodore turns your REU into a storage device not unlike the RAMLink. The major difference is that RAMDOS actually occupies a portion of the computer's memory in order to work. This means that running some programs (such as games) may overwrite the RAMDOS locations, rendering the REU inaccessible for files.

RAMDOS is limited in some ways because it only creates a large "partition" of storage, it does not directly simulate a 1541, 1571, or 1581 partition as JiffyDOS devices like the RAMLink are capable of. This means that RAMDOS is ill suited for special purposes like many commercial games, which can often be run successfully from JiffyDOS partitions on other devices.

So, bottom line, RAMDOS is probably not reason enough to buy an REU. It can give you a significantly large storage area for a session, but that storage is not permanent and not suitable for many applications. But set yourself up with some software that takes direct advantage of the REU, and it really shines-and makes the REU well worth the price of admission.

GEOS can get a serious boost from an REU. GEOS can store device drivers, itself (for rebooting purposes) and a virtual floppy drive in the space of an REU. With the 1750 512K model, GEOS will create a virtual 1571 disk, giving you the capacity of two disk sides to store for very rapid access. In GEOS application terms, this is quite a bit of real estate. Copying the files across at the start of a session may seem a bit tedious and could take a little while, but once they're there the time savings are enormous as GEOS simply pulls data and programs from the fast REU memory. Using the 1750XL requires the installation of a special GEOS Configure program to push the capability beyond the 512K mark. This allows you to create up to two 1581-sized partitions in the REU.

This is something of a dubious distinction, however. After all, GEOS can only recognize three devices at a time. By allocating two of these devices to be virtual 1581s, you limit yourself to a single floppy drive. This makes it a bit of a challenge just getting those 1581s filled! You can of course boot from a 1581 or FD-2000 (or other large partition) if you're a GeoMakeBoot user, but it's often useful to keep a 1541/1571 hooked up to your GEOS system since most original software ships in 5.25" format. You are perfectly welcome to use just the single 1581 partition and retain two slots for regular floppy drives-which, incidentally, is my current standard configuration. It just leaves a large portion of the 1750XL dormant.

One of the significant technical facts about using an REU is that it is actually faster to copy data from a location in the 64's main memory, to the REU, back to another location in the 64's main memory as it is to do a straight copy between the two main memory locations. This has all sorts of implications for programs which move large chunks of data-like file link and compression utilities. The out-of-publication CKit '94 took advantage of this fact. But in the freeware domain

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

you can find worthwhile replacements, such as ABCrunch and DarkSqueeze. With an REU, not only does the capacity of these programs expand greatly (compression programs which offer good reduction rates are notorious for hogging memory to do so), but the speed gain is enormous-simply because memory is that much quicker to access. A linker exists which uses the REU's memory as a buffer, allowing you to create single binary files which take up over 63k of space.

Perhaps the single best use of the REU I've seen is with the C-128 freeware text editor Zed. Zed takes REU memory, adds it to the free 128 memory, and makes it available for documents. This means that with a 1750XL, you can edit a text file on a C-128 over two megabytes in length! This lets you create and view massive documents on your machine, from newsletters to vast portions of literature. It is also the perfect companion to the modern terminal programs which can use the REU as capture buffer storage-once you're done capturing, you can move the document to Zed for editing.

CMD's REUs are the functional equivalent of the old Commodore models-they should be, since the "brain" of the units are the exact same chip. I recently purchased a 1764 REU, but I was so much happier with the expanded memory and 128 compatibility a 1750XL brought that I got rid of the 1764. The only real difference between the CMD units and the Commodore units (aside from the CMD units' greatly diminished size) is the lack of the special expansion socket found on Commodore models, but I have only heard of one (not yet finished) use for that feature.

Do you need an REU? Always a subjective issue. You may want to check the documentation of the programs you own to see if they could be made better by having an REU. Even then, sometimes you can be surprised-for example, did you know that later releases of Infocom games on the 64 could load themselves into an REU for lightning-fast gameplay? Neither did I, until I happened to load one with an REU plugged in. CMD bills the REU as being "for users on a limited budget" among those interested in RAM expansion, comparing of course to the RAMLink. I personally think this is the wrong way to look at it. An REU provides capabilities a RAMLink can't, and vice-versa. They do different jobs, but the jobs an REU can do are often very valuable and time-saving in a way a RAMLink couldn't provide. The REU happens to be cheaper, and is not a long-term virtual storage device like the RAMLink is. That doesn't mean you should look over it just because you have a little extra money to spend.

-J. Compton

SOFTWARE IN REVIEW

The Compleat Dave

Loadstar, P.O. Box 30008, Shreveport, LA 71130-0008, 1-800-594-3370.

Consider the SID chip. Three voices of sound, mono output, and inner workings that, according to an IEEE Spectrum article in the mid-80s, not even its original creator fully understands. The technology behind the SID chip is over a decade and a half old now, and yet it still intrigues many of us in a way we can't quite understand. It does the same for Dave Marquis, and he's turned his intrigue into some 250 songs spread out over two 1581 disks, collected from the Loadstar archives.

Like any Loadstar compilation, upon loading you're greeted with a menu system and, in this case, a whole load of songs. The names of the songs are fairly short and there is no original composer information included, so you're quite often on your own if you are not an expert. In fact, all of the tunes are, according to the documentation, at least 70 years old and the originals have long since lost their copyrights, if they ever had them. The early pages of songs are concerned largely with classical and operatic compositions of European origin, the complexity of which gets translated to the 64 with mixed levels of success. For some, like the Etude in C-Minor, Marquis uses what seems to be simultaneous varying levels of volume to capture a multi-layered effect. Some attempts fall shorter of the mark—which shouldn't come as a major shock, since we are after all talking about 3 voices trying to replicate an orchestra.

The second disk is largely a tribute to American music—various ragtime, Sousa, Gilbert & Sullivan, etc. selections. Personally, I'm not as much of a fan of these, but Marquis seems to tackle them with the same zeal as he did with the "true" classics. I do have to admit a soft spot for his rendition of "Major General" from the Pirates of Penzance, largely because it's such a silly song and seems all the sillier played through SID's pulses. Polka fans won't be disappointed, although I'm not sure how much success you'll have breaking out the old 64 at your next polka party.

While I'm more or less pleased with the musical quality—again, not everything translates well to the SID medium, but in most of the cases I'm more inclined to blame the chip than the SID composer, since none of the tunes that are failures are halting or incomplete attempts—I do have a problem with the menu interface. It seems less intuitive than I'd like it to be. You have to hit space to toggle songs to play, Return to play them, and page through selections not by simply moving the highlight bar off the page, but by actually telling it to move across a page. The most annoying consequence is that if you hit Return instead of space to try to select a song, the entire catalog of songs is scanned through looking for selections to play which haven't been made yet. Also, you cannot select to play songs in a particular order—multiple selections will simply play from the beginning of the catalog to the end, regardless of the order in which you selected them.

Marquis is, incidentally, also the composer behind the "slideshow operas" on the Compleat Walt, so if you have the collection and loved the atmosphere he created, the Compleat Dave is the way to go. As for this collection: there are a number of SID tune archives out there, although few are as concerned with the classics or with consistent quality as this one is. True fans of 64 music will not be disappointed, although if you're looking for rapid-fire techno or rock creations, Dave won't fill that need.

-J. Compton

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

Graphic Interpretation

by Paul Sullivan

GIVE GEOS WHAT IT REALLY WANTS: RAM EXPANSION

Flash! The latest news from the PC world is that the price of memory upgrades is down, CD-ROMs are now up to 24-speed, and Intel has released their 233, 266 and 300 megahertz processors. These new product trends show that greater computer speed is in demand, and software and hardware suppliers are working hard to meet it.

Now just what does that have to do with the faithful GEOS users, you ask? Plenty! First of all, there will be all the more prodding by your PC-toting family and neighbors to "get real and get a PC." Second, you may just be tempted to go spend the money and get one. It is true, whether you are a new GEOS user or a seasoned veteran, that there will always be the desire to make your system bigger, better and faster—possibly to the point of getting an IBM clone. Before you do, I want you to be aware that there are both old and new Commodore upgrade products that could save you a lot of cash and enhance your C-64 or 128 beyond anything you thought possible.

One of the first things that PC users find themselves upgrading is their RAM. The newest applications that are arriving on the PC market need more of it, and so computers have to be upgraded to either 16 or 32 MB to meet the software demand. The standard PC had only 8 MB just three years ago. Of course, once the RAM upgrade is purchased, then it has to be installed- and this can be a very tricky procedure. Not so for the GEOS user! For this issue, I want to look at the "plug and play" devices (to coin a phrase from the IBM world) that can make using GEOS a joy:

RAM expansion units, henceforth referred to as "REUs".

Let's start with the basics: RAM stands for "random access memory." This type of memory is used for temporary storage of data, and depending on the type of expansion unit, that memory may be volatile. This means that data will remain in RAM only until the computer's power is shut off. More complex units have a backup power supply to keep data in RAM intact (thus, NON- volatile) when the computer is off. The benefits they can bring to your GEOS system are striking, beginning with ease of installation. I used the term "plug and play" in reference to these devices, for good reason-they just plug into your computer's game port, and they are ready to use! You do not have to find a torque screwdriver or worry about inadvertently destroying an internal component with static electricity. Just configure your system to recognize it once you have booted GEOS. Once this is done, there will be more storage space on your system. GEOS configures REUs to appear on the desktop as drives that are the size of the 1541, 1571 and/or 1581 respectively. Applications running on the REU will operate a great deal faster because they will not need to constantly access the floppy drive that its data file is stored on. Also in the speed category, if your unit has enough RAM, it can be used to "shadow" your other drives, for greater speed. This is also to be done through the Configure file.

I will add here this personal note-for the longest time I had an REU that had no backup power supply. I ran both the application AND its data file on it. The benefit was maximum speed-no drive gronking until I saved to disk. The risk was power loss (yikes) so if you decide to do this, minimize the chance of losing data and KEEP UPDATING your file!!

If you do not have any REU and are wondering which device would best suit your needs, we will look at specific ones in detail.

Although I have not seen them for sale by any vendors recently, the Commodore 1764 and 1750 REUs were quite popular and relatively inexpensive. They may actually still be found in your local paper's "for sale" pages under the computer category. (It must be noted here that the 1700 REU only held 128K of RAM, and thus

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

does not work under GEOS.) These are very simple and powerful units: the 1764 holds 256K of RAM, and the 1750 holds 512K. Under GEOS, these drives emulated a 1541 (165K) and 1571 (331K) respectively. Owners of the 1764 could add an additional 256K also to make it the functional equivalent of the 1750. Although it lacked a battery backup, I found these units to be very reliable. It was only on a rare occasion (perhaps once every month while using my system daily) that my GEOS 64 would lock up while running applications on the REU. GEOS 128 seems a bit less stable when using it in conjunction with a 1750/64, but the reset button would get things running again in seconds, minus the Preferences, without affecting data in the REU.

GeoRAM is another piece of GEOS history that can boost your system. It is the same capacity as the 1750, with an important difference: it is usable only under GEOS, whereas the 1700 series REUs could be used in conjunction with a myriad of non-GEOS programs. An example of this compatibility involves the application we reviewed last month: Big Blue Reader. It could not do so with GeoRAM, but BBR can automatically detect the presence of a 1750 REU and use it in its transfer process as a large file buffer.

These were apparently such popular units that they are back, and better! CMD announced in Issue 20 that the 1750 is again available. These redesigned models are a tremendous improvement to the old models in that they are smaller by several inches to their predecessor. The CMD 1750 also matches the price of the old 1750-$99.00-and the 1750 XL offers a whopping 2MB for only $40.00 more and come with several handy utilities.

Been there, done that, want more?

I will state very simply that the advanced GEOS user will want RAMLink. Time will not permit an in-depth explanation of the device. You may read about it in detail in Commodore World #14, where Jim Brain gives it an excellent critique. Its capabilities are incredible, and far surpass those of any other REU. Its also expandable—you can add memory and a real-time clock. The utilities included with it allow for GEOS (or any other program, for that matter) to be automatically booted at power-up. Best of all, it has a backup power supply, making its RAM non-volatile. And although the price may seem a bit more than a CMD 1750XL, you'll find that it's still far less than the price of a new PC.

Speed, stability and storage are what RAMLink and the other REUs do for GEOS. For next issue, we will look at how to optimize your GEOS system when using floppy drives. Happy Computing!

Product	Memory Capacity	GEOS RAM Disk	Battery Backup	User Expandable?	Useful Outside of GEOS?
Commodore 1700	128 K	N/A	NO	NO	YES
Commodore 1764	256 K	1541	NO	NO	YES
Commodore 1750	512 K	1571	NO	NO	YES
BSW GEORAM	512 K	1571	NO	NO	NO
SSI SuperClone	512 K	1571	NO	NO	YES
CMD 1750	512 K	1571	NO	NO	YES
PPI BBGRAM	512 K—2 MB	1571	YES	NO	NO
PPI RAMDrive	512 K—2 MB	1581 (1)	YES	NO	YES
CMD 1750XL	2 MB	1581 (2)	NO	NO	YES
CMD RAMLink	1—16 MB	1581 (1)	YES	YES	YES

TRY ME!

Join Denny in his search for the evil Ghost, in

DENNY'S QUEST

Explore caves, secret areas, graveyard and desert in this colorful arcade/adventure/puzzle game for the C64.

ONLY $9.99!

* Check or money order, U.S. funds only please!
* Add $3 s/h outside U.S.
* Coming soon: DENNY'S WORLD!

To order or for more information:
SUNRISE SOFTWARE
P.O. BOX 1883
MASSAPEQUA, NY 11758

EXPAND YOUR SYSTEM

3 SLOT CARTRIDGE PORT EXPANDERS

The EX2+1 and EX3 Cartridge Port Expanders bring new expandability to you Commodore 64 or 128. Combine the use of compatible cartridges. Disable cartridges not in use. Change the address your computer finds a cartridge at. Avoid the constant changing of cartridges that puts extra wear on your cartridge port. The EX3 offers 3 vertical expansion slots, while the EX2+1 provides 2 vertical slots and 1 horizontal slot. Both units offer 7 switchable signals per slot, address mapping on slot 2, and a reset button.

CALL 1-800-638-3263

EX3

$34.00 Plus S/H

EX2+1

$39.00 Plus S/H

Creative Micro Designs, Inc., P.O. Box 646, East Longmeadow MA 01028

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

DemoMania

by Sherry Freedline

LEAN TIMES IN DEMOLAND?

This column has been stewing in my head for way too long. So, I'm finally putting it down on paper. For over a year now, I have been actively involved in the demo world reviewing demos for Commodore World. At first I was very excited by the thought of finally finding my very own niche within the demo environment. Writing these columns is my personal way of contributing to today's demo scene.

For years I've wondered why demos were kept in the dark. None of the popular Commodore oriented magazines that I knew of ever gave this popular medium the coverage it deserved. Some recent Commodore events may have shed some light on this very situation. Perhaps they were never -reviewed- basically because who has the right to -review- or -judge- an item created and freely contributed to the public domain purely for the creator's enjoyment without any request of compensation? Demo production appears to be a hobby, almost a passion or addiction even, among their creators. Once an individual's hobby falls under the criticism of others (albeit good or bad), the creator may not find it as enjoyable. It then becomes more of a task than a fun, recreational activity. These thoughts hold true for any activity.

So, to get to straight to the point, I want to take this space to stress the goal of my Demo Mania column; to publicize, thank, and cast some light on the Commodore medium I've quietly enjoyed for many years. I am so thankful to all of the many demo groups and soloists, past and present, that have contributed to the vast library of public domain demos. I feel lucky to have the privilege of writing this column and simultaneously having the ability to publicly thank the demo producers.

Well, that's enough -mush-, let's move on to current demo events. Demo enthusiasts are probably wondering what is happening with the highly publicized NTSC Co-Op demo. The last news I heard was that four of the five required pages have been submitted. Naturally, one might ask what has happened to the fifth contribution? Well, I truly don't know the answer. All I can do is ask that folks keep in mind the fact that it is summer and most individuals find it difficult to justify sitting indoors for hours on end glued to a computer on these warm sunny days (even if it is a Commodore computer!). Additionally, just the stress of being the last contributor is enough stress to perhaps cause the producer to procrastinate. Personally, I know that the closer it gets to my column deadline, the harder it gets to force myself to sit down and write—even though I really enjoy writing this column.

So, what is a demo addict to do during these lean, demo-less months? Well, this demo addict has been happily cleaning up, organizing and reviewing her collection with the help of the internet. I can't believe how many great demos I have forgotten or even missed downloading. Fortunately, all the demo files are there, on the internet, nicely organized on ftp sites by fellow demo enthusiasts in their free time, free for downloading by one and all.

The next time you find yourself wondering when the next demo might be released, why not take a few moments of your time to Email your favorite demo soloist or group a thank you letter. Who knows, perhaps it will inspire the next awesome demo release?

Next column I plan on sharing with you some of the fun I've had while organizing my demo collection. Perhaps you'll find you too have missed downloading a few oldies but goodies; therefore, finding yourself an all new demo to enjoy!

Driven Chart 08/97

Favorite Demos Poll

1.	Tears '97	Millenium
2.	CAT '97	FOE
3.	Toasted Braincells	Millenium
4.	Apathy	Suraklin
5.	Nightmare	Millenium
6.	Snowflake	Style
7.	7 Years	FOE
8.	Test Pattern	PSW
9.	Tidal Forces	Omni
10.	Texas	The Fatman
11.	Satan Claws	Carcass
12.	Spin	PSW
13.	H.T.B.C.P.	Local-H

Sherry Freedline is a freelance writer and is also the SysOp for the Genie Commodore 64/128 Roundtable. Visit Sherry's homepage on the Internet at http://www.lm.com/~qt, or drop her Email at: sherry@cmdweb.com.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

CHECKSUM

Commodore World's Program Entry Checking Program and Tips on Entering Programs from this Magazine

CHECKSUM is a program that proofreads your typing when you enter a listing from the magazine. It assigns a numerical value to each character that you type, adds up the values of the line you typed and displays the sum. (Checksum, therefore, means that it checks your typing by summing the characters.) It also verifies that you have typed the characters in the proper order. (Checksum won't tell you if you miss a line of code entirely, so verify that yourself.) Checksum runs "in the background" when you type in lines of program code. Whenever you type a line and press RETURN, Checksum will display a value. Compare that value to the value published next to the line of code in the magazine. If the numbers match, you've typed the line correctly. Simple.

Typing in CHECKSUM

First, type in Checksum carefully from the listing on this page. Be sure to press RETURN after every line to enter it into memory. Once you have typed the program, *save it*. In fact, save it a few times while you're typing, just to be safe. (This is good advice whenever you type in a program. I usually change the name each time I save; for example, Checksum1, Checksum2, and so on.) Double-check your work, making sure that you've typed in every line and that you've pressed RETURN after every line you've typed. If you make errors when typing in Checksum, a test run of Checksum will tell you which line is incorrect. (This safety feature works only in the Checksum program itself, and does not apply to any other listings in the magazine.) Whenever you find a typing error (in any program listing), fix it, press RETURN to enter the change, save the program again and try another run. Repeat this process as often as necessary. Important tip: Don't get discouraged if the program won't run. Be patient. Be thorough. It will work eventually. You'll know your Checksum is ready when you see the line:

```
TO TOGGLE ON OR OFF, SYS XXXX
```

Entering Programs Using CHECKSUM

When you're ready to type in your first listing from the magazine, load and run Checksum. Make a note of the number that is displayed on the screen (49152 for the C-64; 3328 for the C-128). To activate and deactivate Checksum, type SYS followed by that number, then press RETURN. You need to have Checksum active whenever you're typing in a listing. Checksum must be deactivated, however, when you run the new program. The next step is typing in a new program listing as it appears in the magazine.

As you begin, you'll notice that to the left of the start of each line is a number. Don't type this number in: It's simply the Checksum value. Stop typing at the end of the program line and press RETURN. If you've typed the line correctly, the number displayed on the screen will match the Checksum value. If the numbers don't match, you've made a mistake. Check the line carefully, make your changes and press RETURN. The computer won't know you've made a change unless you press RETURN on the changed line to enter it. A few type-in hints: The Checksum does not verify blank spaces in the program lines unless they are within quotation marks, because adding or omitting such spaces will not affect the operation of the program. The exception to this is hexadecimal Data statements. These are the Data statements, such as this one, that don't have commas:

```
100 DATA 123456789012345678901234567890*123456789012345
67890*12345678901234567890*
```

In statements such as these, you must have one space between the word DATA and the numbers that follow. Checksum will not catch that error.

Special Key Combinations

As you type, you may be confused the first time you see curly braces {}. These braces mean "perform the function explained within." For example, {22 SPACES} means that you need to press the space bar 22 times. Don't type the braces (you can't, of course, because there are no curly braces in the Commodore character set). Here are some other common examples:

{CLEAR/HOME}	hold down the SHIFT key and press the CLR-HOME key.
{2 CRSR DN}	tap the cursor down key twice.
{CTRL i}	hold the CONTOL key and press the I key.
{CMDR t}	hold down the COMMODORE key and press the T key.

Continue typing in your program, saving often and checking each checksum value with the one in the magazine, until you've finished the listing. Phew! So now you're ready to run your program, right? Not quite. First, save it. Second, deactivate Checksum by typing SYS followed by 49152 for the C-64 or 3328 for the C-128. Now you can run. Don't be discouraged if you still get an error. It happens. Use Checksum faithfully. Be patient. Be thorough. It will work eventually.

CHECKSUM

```
100 rem cw checksum 64/128
110 mo=128:sa=3328
120 if peek(65533)<>255 then mo=64:sa=49152
130 i=0:ck=0:ch=0:ln=300
140 for k=0 to 16
150 for j=1 to 10
160 read b:if b>255 then goto 280
170 ch=ch+b:poke sa+i,b:i=i+1
180 next j
190 read lc:if lc<>ch then goto 280
200 ch=0:ln=ln+10
210 next k
220 pokesa+110,240:pokesa+111,38:pokesa+140,234
230 printchr$(147):print"cw checksum";str$(mo):print
240 print"to toggle on or off, sys";sa:if mo=128 then 270
250 pokesa+13,124:pokesa+15,165:pokesa+25,124:pokesa+26,165
260 pokesa+39,20:pokesa+41,21:pokesa+123,205:pokesa+124,189
270 pokesa+4,int(sa/256):sys sa:new
280 print"you have a data error in line";ln;"!":end
290 rem do not change these data statements!
300 data 120,162,24,160,13,173,4,3,201,24,884
310 data 208,4,162,13,160,67,142,4,3,140,903
320 data 5,3,88,96,32,13,67,152,72,169,697
330 data 0,141,0,255,133,176,133,180,166,22,1206
340 data 164,23,134,167,132,168,170,189,0,2,1149
350 data 240,58,201,48,144,7,201,58,176,3,1136
360 data 232,208,240,189,0,2,240,42,201,32,1386
370 data 208,4,164,180,240,31,201,34,208,6,1276
380 data 165,180,73,1,133,180,230,176,164,176,1478
390 data 165,167,24,125,0,2,133,167,165,168,1116
400 data 105,0,133,168,136,208,239,232,208,209,1638
410 data 169,42,32,210,255,165,167,69,168,170,1447
420 data 169,0,32,50,142,169,32,32,210,255,1091
430 data 32,210,255,169,13,32,210,255,104,168,1448
440 data 96,104,170,24,32,240,255,104,168,96,1289
450 data 56,32,240,255,138,72,152,72,24,162,1203
460 data 0,160,0,32,240,255,169,18,208,198,1280
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

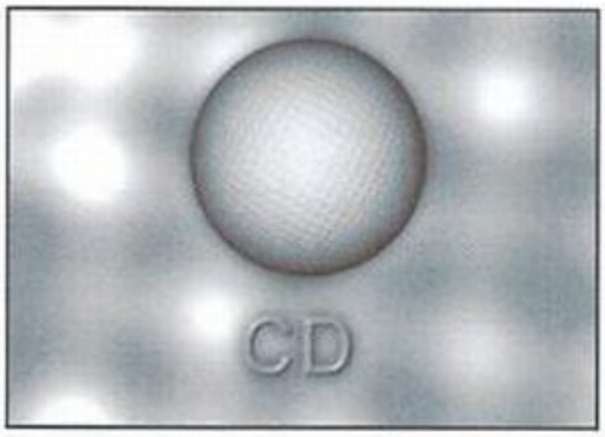
http://www.oldgamesitalia.net/

Carrier Detect

By Gaelyne R. Gasson

EMAIL WEB ASSISTANT: BRINGING THE WEB HOME

One of the things I really enjoy about the Internet is that you can make use of its various features in more than just one way. For instance, when I'm really busy but need to check something that I know is on the Web, I can fire off an Email message and read the web page later once it's been retrieved for me. Sometimes this can save me a great deal of time when I'm researching a subject and know exactly where to find the information I need. It also saves me time online—time I can be using for fun instead of work. It's almost like having my own research assistant.



If you already have access to the World Wide Web from your Internet provider, using Email to retrieve Web documents is a luxury, but others aren't so lucky and either don't have access to the Web on their Internet provider, or only have Email access. For those without direct access, retrieving Web pages through Email can be a godsend.

Quick Review: What is the World Wide Web

The World Wide Web was developed as an easy way to offer many different types of data with one interface. For those with graphical browsers, it lets you see words and pictures on the same screen, and even hear music or watch movies. Currently, most C= users access the Web using a text-only browser named "Lynx" that many Internet providers make available to their users. We don't see graphics as lynx displays them as "[image]" but we can download the files to view them offline if we wish.

Web pages can be linked to other (usually related) pages so if you're viewing a page with news articles and read about a beached whale, it may have links to other places on the Web with information on whales in general, or specific types of whales. These links are displayed as either highlighted text, or a number is shown next to the linked text. To select a link, you can either cursor to it and press return, or if a number is shown, type the number and press return. Lynx tells you that it's contacting the site for the page you've selected, and eventually it will display the new page of information. When the Net is nice and fast this can occur very quickly, otherwise it can take a few minutes.

The "addresses" behind the links that tell the web browser where to find a specific file or link are called "URLs" (pronounced as either 'Earl' or spelled out as U-R-L). The URL is to the Web what an Email address is to Email. It stands for "Universal Resource Locator" and is basically the address on the Internet for a particular item, be it a Web page, FTP directory or an image, sound or other file.

Accessing the Web Through Email

Using Email to access the Web requires sending commands to a Web server, which in turn finds the page you've requested and sends it back to your Email address. It can send the web page to you in it's "raw" format of HTML (HyperText Markup Language), or in "displayed" format—how it would look if viewed with a text browser, or both ways. Because a web page can contain links to other pages that wouldn't appear in the formatted text (all you would see is the text, not the URL), if you retrieve both formats, you'll be able to use the HTML portion to find URLs in the original document, allowing you to request further Web pages on the same topic. One neat thing that C64 users might appreciate is the fact you can tell the WWW server to send the text back to you in 40 column format if you prefer.

To retrieve a Web page, you'll need to know two things in advance. The first is the Email address for a WWW server to use,

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

and the second is the URL for the Web page you want to see. We'll use the URL for Commodore World magazine's home page. There are two WWW servers that seem to offer reliable service, and these are: W3Mail (w3mail@gmd.de) and Webmail (webmail@www.ucc.ie). Those with offline mail readers will have to send the Email messages while online instead of with their offline mail reader. This is because the Web mail servers will not accept messages that begin with anything other than a command that it understands, and most offline mail readers use the first line for the address. You can try to send mail by only using the address in the "To:" field, but it's generally not recommended as some QWK programs don't allow you to use Email characters such as "@" in the To: field and will remove them before sending the message.

W3Mail

Of the two WWW mail servers, I prefer to use W3Mail because it allows me to retrieve image and other files (the other one doesn't). We address the message to **w3mail@gmd.de** and in the **BODY** of the message (not the subject), we tell it what we want it to do. If we send a message with the word "help" as the body of the message, the server will send us an Email with instructions on how to use it. A few of the "basic" instructions are given in this article, but there are many additional features that you'll want to learn about using too.

We can send up to 10 commands in one message to the W3mail server, but each command must be on a separate line. Sometimes you'll find that you won't have room to type an entire command on a single line, and the work-around for this is adding a backslash (\) as the last character at the end of the line, which tells the WWW server that the command or URL is continued on the next line. There are many different "switches" (additional instructions) that we can use to tell the server how we want the web page delivered. Our message to retrieve the Commodore World home page could be as simple as:

```
get http://cmdweb.com/cworld/
```

If we want to get graphics included on the page, we can use the "-img" switch in the command:

```
get -img http://cmdweb.com/cworld/
```

This will retrieve the text from the page and any image files as well. The graphics will arrive in MIME format. If you want to retrieve the graphics as UUencodes, you would need to send the command:

```
get -img -uu http://cmdweb.com/cworld/
```

You may prefer to use the "-a" switch so the page is sent as formatted text, but any included links in the page are given with the complete URL, so if need be you can retrieve those pages as well. You can also tell the server to send the page formatted to fit within 70 screen columns with the "-c 70" switch (there's a space between the -c and number). The complete command looks like:

```
get -a -c 70 -img http://cmdweb.com/cworld/
```

For 40 column displays, the command is:

```
get -a -c 40 -img http://cmdweb.com/cworld/
```

We can save time and get a web page plus every URL it has links to (up to a maximum of 50), with the "-l" (dash el) switch. Since there's no need to see the URLs listed in the file (they're given before each separate web page in the returned Email), we can have the system send only the formatted text by using the "-t" switch. The command is:

```
get -l -t http://cmdweb.com/cworld/
```

Webmail

For requesting WWW pages through the Webmail server, we send Email to **webmail@www.ucc.ie** and in the **body** (not the subject) of the message, we type:

```
send http://cmdweb.com/cworld/
```

This will retrieve the formatted web page. If you use the command "go" instead of "send", both the raw HTML file and formatted page is mailed in the same message. The more difficult to read HTML portion appears at the start of the message followed by the formatted version. This server is slightly faster than W3Mail, but it will not allow you to retrieve images or binary files, it won't process long command lines unless it fits all on one line, and doesn't send multiple web pages as the W3mail server does.

How long will it take to get the requested information back from the server? This depends on a lot of different things such as how your Email provider is connected to the Internet (some BBS systems only connect to the Internet to exchange mail once or twice a day), and how fast (or slow) the network is when you send your request, plus how many other requests the WWW server has received before yours. If you request many files at the same time, your requests may also take longer to be filled. Generally if your Internet provider is on the Internet, your requests are returned within the hour (sometimes even in minutes). For those with providers that only connect to the Net once or twice a day, it could take as long as a day or two. If we request the page to be retrieved as formatted text, the pages returned are very similar to what we see when we use Lynx. Seeing links shown as complete URL's can interrupt the flow of reading, but after a bit of practice, my eyes seem to jump over any "words" that begin with "http://" when I'm reading the document.

Although it's not nearly as much "fun" as using the Web directly, I like having an invisible "research assistant" to go grab WWW pages for me and it certainly can save a lot of frustration when I need specific information but don't want to wait online for it to arrive.

Gaelyne Gasson is the author of "The Internet for Commodore C64/128 Users" and can be contacted via Email at gaelyne@cmdweb.com or visit her web site at: http://videocam.net.au/~gaelyne.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

BASIC INSTINCTS

INSIDE BASIC PART ONE

by Doug Cotton

One of the less trivial learning experiences I've had with BASIC was when I really needed to know how BASIC programs were stored in memory. With a good working knowledge of this subject, you can write programs that create or modify other programs, or even programs that modify themselves. These are powerful capabilities, and should naturally be used only in conjunction with good planning.

In addition to knowing how BASIC stores data in memory, you'll also need to be familiar with how BASIC programs are stored on disk. Since this latter information is simpler, we'll start with it.

Program files (like most files on a Commodore) are broken up and stored into into blocks of 256 bytes each on a disk. The sum of the blocks used to store a program are linked together to form a *file chain*. The linking of the blocks within the file chain is accomplished by a track and sector link, located in the first two bytes of each block. Each link points to the next block in the chain (the first byte is the track, the second is the sector). When the last block is reached, the track link byte contains a zero; the sector link contains a pointer to the last byte used in the block.

Using this method, each block contains 254 bytes of the actual program code itself, with two exceptions: the last block of the file contains only the number of bytes indicated in its sector link, and the first block only contains 252 bytes of program code (because the start address of the program is stored in two bytes following the track and sector link bytes).

The sidebar, *BASIC Program File Chain on Disk*, illustrates the format described above. We should also note that a BASIC program that is only two blocks on disk would have no interrim blocks—just a first and last block; likewise, a BASIC program file that is only one block would combine the properties of the first and last block into one.

The sidebar, *BASIC Program File in Memory*, diagrams how the bytes that make up a BASIC program are stored. At the beginning of the BASIC program text area you'll always find a zero. This location is usually set for $0800 on the Commodore 64, and $1C00 on the Commodore 128. However, these location might change for some programs, so it's best to check the Start of BASIC pointer at locations 43 and 44 ($2B/$2C) in the 64, or locations 45 and 46 ($2D/$2E) in the 128. (*Note: these pointers are in low byte/high byte format and actually point to one byte past the Start of BASIC where BASIC program text begins.*)

Following the zero byte at the Start of BASIC are two bytes that hold the line link to the second line of BASIC. If there is no program in memory, these bytes both contain a zero; they otherwise point to the memory location where the line line link for the second line of BASIC program text begins. Let's check this out with an example. Turn on your computer (in 64 mode if it's a 128) and type NEW, then press the RETURN key. Now enter the following in direct mode (direct mode means that you don't put a line number in front of it):

```
FORI=2048TO2050:PRINTI,PEEK(I):NEXT
```

When you press RETURN you'll see the following:

```
2048        0
2049        0
2050        0
```

At 2048 we have the zero that is always at the Start of BASIC. The next two bytes are both zero, which means there is no BASIC program currently in memory. Now enter this line:

```
10 PRINT"HI"
```

After you press RETURN, enter the following in direct mode:

```
FORI=2048TO2060:PRINTI,PEEK(I):NEXT
```

When you press RETURN you'll see the following:

```
2048        0
2049        11
2050        8
2051        10
2052        0
2053        153
2054        34
2055        72
2056        73
2057        34
2058        0
2059        0
2060        0
```

Now we do have a BASIC program in memory. The 11 at 2049 and the 8 at 2050 form the line link, pointing to address 2059 (11+(8*256)) where then next line link will be found if another line exists, or two zero bytes if the End Of BASIC has been reached (the latter is true in this case).

Following the line link, we have the line number at 2050 and 2051, which indicates our line number is 10 (10+(0*256)).

The next location, 2053, is where the program text for our first line begins. This

BASIC Program File Chain on Disk

First Block

track link	sector link	start addr. (low byte)	start addr. (high byte)	first 252 bytes of BASIC program

Interrim Block(s)

track link	sector link	next 254 bytes of BASIC program

Last Block

always 0	pointer to last byte	up to 254 bytes of BASIC program

BASIC Program in Memory

Start of BASIC	BASIC Line Header Information			
always 0	line link (low byte)	line link (high byte)	line number (low byte)	line number (high byte)

BASIC Line Data	End Of Line	End Of BASIC	
tokens and text	always 0	always 0	always 0

Note: The line link always points to the memory location where the line link for the next line begins. If both bytes of a line link contain a zero, it indicates the End Of BASIC.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

location contains a 153. Since this value is higher than 127, it is a token (all values above 127 are assumed to be tokens, while values below 128 are assumed to be PETASCII text). We can track down this value in our chart to determine that the token value for 153 indicates a PRINT command. The next four bytes are all values below 128, so these are PETASCII text. You can confirm these by checking a PETASCII value table (many programming books and Commodore manuals contain such a table) or by typing PRINTCHR$(x) in direct mode (replace the x with the value you want to see). In this case we have a quote character (CHR$(34)), an "H" (CHR$(72)), an "I" (CHR$(73)) and another quote character.

Following the last quote character, we find a zero at location 2058. This signals that we have reached the End Of Line, and that the next two bytes are our next line link. As mentioned before, these two bytes are both zero, so we're at the End Of BASIC.

This brings us to the conclusion of part one of this series. In the next installment of BASIC Instincts, we'll dig into this subject a little deeper, and see just how we can use this information to modify programs in memory, and to create new programs on disk.

Commodore BASIC 2.0 & 7.0 Keywords & Tokens

Hex. Token	Dec. Token	Keyword	Hex. Token	Dec. Token	Keyword	Hex. Token	Dec. Token	Keyword	Hex. Token	Dec. Token	Keyword
$80	128	END	$AE	174	^	$D4	212	INSTR[1]	$FE $06	254 6	MOVSPR[1]
$81	129	FOR	$AF	175	AND	$D5	213	ELSE/BEND[1]	$FE $07	254 7	SPRITE[1]
$82	130	NEXT	$B0	176	OR	$D6	214	RESUME	$FE $08	254 8	SPRCOLOR[1]
$83	131	DATA	$B1	177	>	$D7	215	TRAP[1]	$FE $09	254 9	RREG[1]
$84	132	INPUT#	$B2	178	=	$D8	216	TRON[1]	$FE $0A	254 10	ENVELOPE[1]
$85	133	INPUT	$B3	179	<	$D9	217	TROFF[1]	$FE $0B	254 11	SLEEP[1]
$86	134	DIM	$B4	180	SGN	$DA	218	SOUND[1]	$FE $0C	254 12	CATALOG[1]
$87	135	READ	$B5	181	INT	$DB	219	VOL[1]	$FE $0D	254 13	DOPEN[1]
$88	136	LET	$B6	182	ABS	$DC	220	AUTO[1,5]	$FE $0E	254 14	APPEND[1]
$89	137	GOTO	$B7	183	USR	$DD	221	PUDEF[1]	$FE $0F	254 15	DCLOSE[1]
$8A	138	RUN	$B8	184	FRE	$DE	222	GRAPHIC[1]	$FE $10	254 16	BSAVE[1]
$8B	139	IF	$B9	185	POS[1]	$DF	223	PAINT[1]	$FE $11	254 17	BLOAD[1]
$8C	140	RESTORE	$BA	186	SQR	$E0	224	CHAR[1]	$FE $12	254 18	RECORD[1]
$8D	141	GOSUB	$BB	187	RND	$E1	225	BOX[1]	$FE $13	254 19	CONCAT[1]
$8E	142	RETURN	$BC	188	LOG	$E2	226	CIRCLE[1]	$FE $14	254 20	DVERIFY[1]
$8F	143	REM	$BD	189	EXP	$E3	227	GSHAPE[1]	$FE $15	254 21	DCLEAR[1]
$90	144	STOP	$BE	190	COS	$E4	228	SSHAPE[1]	$FE $16	254 22	SPRSAV[1]
$91	145	ON	$BF	191	SIN	$E5	229	DRAW[1]	$FE $17	254 23	COLLISION[1]
$92	146	WAIT	$C0	192	TAN	$E6	230	LOCATE[1]	$FE $18	254 24	BEGIN[1]
$93	147	LOAD	$C1	193	ATN	$E7	231	COLOR[1]	$FE $19	254 25	BEND[1]
$94	148	SAVE	$C2	194	PEEK	$E8	232	SCNCLR[1]	$FE $1A	254 26	WINDOW[1]
$95	149	VERIFY	$C3	195	LEN	$E9	233	SCALE[1]	$FE $1B	254 27	BOOT[1]
$96	150	DEF	$C4	196	STR$	$EA	234	HELP[1]	$FE $1C	254 28	WIDTH[1]
$97	151	POKE	$C5	197	VAL	$EB	235	DO[1]	$FE $1D	254 29	SPRDEF[1]
$98	152	PRINT#	$C6	198	ASC	$EC	236	LOOP[1]	$FE $1E	254 30	QUIT[1]
$99	153	PRINT	$C7	199	CHR$	$ED	237	EXIT[1]	$FE $1F	254 31	STASH[1]
$9A	154	CONT[5]	$C8	200	LEFT$	$EE	238	DIRECTORY[1]	$FE $21	254 33	FETCH[1]
$9B	155	LIST	$C9	201	RIGHT$	$EF	239	DSAVE[1]	$FE $23	254 35	SWAP[1]
$9C	156	CLR	$CA	202	MID$	$F0	240	DLOAD[1]	$FE $24	254 36	OFF[1]
$9D	157	CMD	$CB	203	GO	$F1	241	HEADER[1]	$FE $25	254 37	FAST[1]
$9E	158	SYS	$CC	204	RGR[1]	$F2	242	SCRATCH[1]	$FE $26	254 38	SLOW[1]
$9F	159	OPEN	$CD	205	RCLR[1]	$F3	243	COLLECT[1]	$FF	255	PI
$A0	160	CLOSE	$CE $02	206 2	POT[1]	$F4	244	COPY[1]			DS$[1,3]
$A1	161	GET	$CE $03	206 3	BUMP[1]	$F5	245	RENAME[1]			DS[1,3]
$A2	162	NEW	$CE $04	206 4	PEN[1]	$F6	246	BACKUP[1]			EL[1,3]
$A3	163	TAB(	$CE $05	206 5	RSPPOS[1]	$F7	247	DELETE[1,5]			ER[1,3]
$A4	164	TO	$CE $06	206 6	RSPRITE[1]	$F8	248	RENUMBER[1]			GET#[4]
$A5	165	FN	$CE $07	206 7	RSPCOLOR[1]	$F9	249	KEY[1]			GETKEY[1,4]
$A6	166	SPC(	$CE $08	206 8	XOR[1]	$FA	250	MONITOR[1]			GO64[1,4]
$A7	167	THEN	$CE $09	206 9	RWINDOW[1]	$FB	251	USING[1]			PRINTUSING[1,4]
$A8	168	NOT	$CE $0A	206 10	POINTER[1]	$FC	252	UNTIL[1]			ST[3]
$A9	169	STEP	$CF	207	JOY[1]	$FD	253	WHILE[1]			TI$[3]
$AA	170	*	$D0	208	RDOT[1]	$FE $02	254 2	BANK[1]			TI[3]
$AB	171	-	$D1	209	DEC[1]	$FE $03	254 3	FILTER[1]			
$AC	172	+	$D2	210	HEX$[1]	$FE $04	254 4	PLAY[1]			
$AD	173	/	$D3	211	ERR$[1]	$FE $05	254 5	TEMPO[1]			

NOTES: (1) Commodore 128 (BASIC 7.0) Only. (2) Unimplemented - Token has no function. (3) Reserved keyword for variable. (4) Reserved word made up of a keyword plus text or two keywords combined. (5) Direct mode only.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

GEO PROGRAMMIST

READING GEOWRITE DOCUMENTS

By Maurice Randall

Have you ever thought about writing a program that could make use of a assosciated tex file? For example, you might want a text-based configuration file that a user could easily alter. As we're all aware, the GEOS standard for editing text is geoWrite. With this in mind, we'll want our program to work with geoWrite formatted text files (and it isn't that difficult—honest!).

The first thing we need to learn how a geoWrite file is constructed. Most of what we'll find in geoWrite files are plain ASCII characters, like the ones we normally see displayed on the screen. In most cases, this is what we'll be interested in having our program deal with. While you may have some application in mind where you want to work with some of the formatting codes, we're going to assume for this article that we only want to extract the ASCII text that the file contains. In order to do that, we'll still need to know what those other parts of a geoWrite file are, and how to ignore them.

A geoWrite file is a VLIR (VariableLength Indexed Record) file with each document page stored in separate record. This format works well, as it makes going straight to any desired page very easy.

Within each page, a specific layout is created. A page always begins with a *ruler*, which is a series of bytes that define how the page begins. The ruler contains information about the margins, tabs, and justification. Even when a page is a continuation of a previous page, it still begins with a ruler.

Immediately following the ruler are the bytes that define the first font that is used on the page. Past this point we'll normally begin to see text, though it may be mixed with additional commands for changing fonts. If any new paragraphs contain different ruler formatting, we may also encounter additional rulers. Weeding out all these non-text bytes is what we'll do in this article. But first, just a little more discussion on the layout of these pages.

Have you ever thought about the difference between a word processor and a text editor? Aren't they one and the same? I suppose it depends on how you look at it, or maybe what your needs are. But generally text editors are intended to deal with text one line at a time. In the case of geoWrite, it deals with text one paragraph at a time. GeoWrite doesn't care how long a line is because it will take care of that with word wrapping at the right margin. Text editors often don't know about margins, they only know that the line ends when it sees the end-of-line character(s). There is no character to end a line in geoWrite, but a single carriage return will end the whole paragraph. At the start of a paragraph, you might find one of those rulers, but only if a change was made to one of the ruler settings for that paragraph. Otherwise, plain text will begin the paragraph, and the same ruler settings that were used in the previous paragraph will apply.

So, how does the page itself end? This depends somewhat on what the user has typed in. If the user has inserted a page break, you'll find a single form feed character as the last byte of the page, and this will be the last byte of the VLIR record for that page. If the text flows right from one page to the next, then the last character you see on the screen may be the last one you'll find in the record. It's also possible that the last character could be a carriage return. You'll need to pay attention to when there are no more bytes in the record to be absolutely sure of reaching the last byte of the page.

Supposedly, the final page of a geoWrite file is supposed to end with a null byte. This isn't always the case, however, and in reality isn't at all necessary. Sometimes, you may even see a null byte as the last byte of a page that isn't even the last one. This can wreak havoc with geoWrite, but it shouldn't with our program, because we'll ignore this and any other bytes that don't belong in a geoWrite file. Yes, geoWrite files can become corrupted, many of us have experienced that. This may get you thinking of a utility for fixing bad geoWrite files—there's actually a real need for something like that.

Let's work on our program a little and read in some data. All we want with this particular program is the ASCII part. Since our data will actually get smaller, we can store the extracted text into the same buffer we use to read the page. After prompting the user with a dialogue box to get a file selection, use FindFile to get the directory entry of the file into dirEntryBuf. Then use GetFHdrInfo to load the file's header block into memory. We need that so that we can check the version number of the data file. The version number will help us determine the type and size of ruler that will start each page.

Once the header block is in memory at fileHeader, just check the version string to see if it is at least V2.0 or greater, or if it is older than V2.0. You can see that only one byte needs to be checked, and it will be either an ASCII '1' or '2'. This byte will be at fileHeader+90. A V1.x ruler contains 20 bytes, while a V2.x ruler contains 27 bytes.

If you don't want to check the version number, you can usually get away with just checking the very first byte of every page. A V2.x ruler always begins with an ESC_RULER byte, which has a value of 17. A V1.x ruler always begins with two bytes that identify the pixel setting of the left margin. If somehow the left margin is set exactly at 17 pixels (not likely, but possible) then it will look like a V2.x page. So, it is usually safest to check the version number first. Let's write some code.

```
;this assumes we have already gotten a filename
;loaded into a buffer at fNameBuf.
SetRulerSize:
  LoadW r6,#fNameBuf
  jsr FindFile
  txa
  bne 90$                ;branch on any error.
  LoadW r9,#dirEntryBuf
  jsr GetFHdrInfo        ;load in the header block.
  txa
  bne 90$
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

```
  lda fileHeader+90
  cmp #'1'              ;is this V1.x?
  beq 10$               ;branch if so.
  lda #27               ;27 bytes for V2.x
  .byte 44
20$
  lda #20               ;20 bytes for V1.x
  sta rulerSize
90$
  rts

fNameBuf:
  .block 17
rulerSize:
  .block 1
```

Okay, let's load in the first page of this geoWrite file. First we need a buffer. Normally it is safe to use about 5000 bytes for a buffer, but you may want to use a larger one depending on the nature of your program. Set up a buffer somewhere in a .ramsect area so that it doesn't add to the size of your program on disk. Let's open the file and read the page into the buffer.

```
;this routine assumes the file has already
;been opened with OpenRecordFile.
ReadPage:
  ldx pageNumber        ;get the page number.
  dex                   ;make it the record number.
```

(continued on the following page)

MEETING 64/128 USERS THROUGH THE MAIL

NO USER'S GROUP?
USER'S GROUP FADING?

Join our world wide group for answers to your burning questions about C= 64/128

COMMODORE MAILINK

Contact; Tom Adams, (President)
4427 39TH ST
BRENTWOOD MD 20722-1022
tomadams@sysnet.net

UPGRADE YOUR COMMODORE!!!

Refurbished Hardware — New Hardware

Monitors		Drives		Other	
1701	$149.95	1541/C	$89.95	C64 -	$94.95
1702	$149.95	41 w/Dips	$104.95	64C -	$114.95
1802	$174.95	1541-II	$119.95	128 -	$174.95
1802D	$199.95	1571	$159.95	128D	$324.95
1902	$224.95	1581	$174.95	SX-64	$349.95
1902A	$249.95	MSD-2	$149.95	1660	$24.95
1084	$294.95	1001SFD	$129.95	1670	$39.95
1084S	$324.95	B.I. Buscard-II			$59.95
Mono's	$44.95+	1530 Datasette			$34.95

Miscellaneous

Books	$10-$15	Printer Interfaces $49.95+
Prog's	$5-$20	Epyx Fastload Cartridge $34.95
Repairs	$ASK	Super Snapshot v4 $49.95
Manuals	$7	Super Grafix Jr. $39.95

New APROTEK Accessories

C24-2400 Baud (64/128)	$74.95
User Switch	$30.95
Convert-A-Com	$29.95

New CMD/LMS Accessories

JiffyDOS C64/SX64 'System'	$69.95
JiffyDOS 128/128D 'System'	$79.95
128 Kernal $59.95 64 Kernal	$49.95
Additional JiffyDOS Drive ROM	$34.95
RAMLink Bs. $209.95 c/w 0 MB	$274.95
c/w 1 MB $319.95 c/w 4MB	$479.95
Real Time Clock (Optional) Add	$24.95
FD-2000	$249.95
NEW Super Snapshot v5.22	$84.95
1750 Superclone REU 512K	$169.95

Ask For Anything! We May Have It!

J.P. PBM Products By Mail
Box# 60515, N. Sheridan Mall P.O.
Downsview, Ont. Canada M3L 1B0
Tax-Canada + 7%GST, Ontario +8% PST

Send CDN Funds/15% USA Exchange
15 day Warranty On Refurbished Hdwr.
Allow 4-6 weeks for delivery
1996 Catalogue Disk (64 Format) — $2
Shipping-($0-$25=$4, $26-$99=10%, $100-$199=6%, $200-$499=7.5%, %500=-6%, USA=15%)

The **Vintage Computer**
Specializing in Pre-Owned Commodore

Free Catalog

- C-64 w/PS $19.95
- C-128 w/PS $59.95
- PLUS4 w/PS $18.95
- VIC-20 w/PS $18.95
- C64c w/PS $49.95
- ... AND MORE!

619-445-8432

Vintage Computers 520 Silverbrook Drive, El Cajon, CA 92019

FREE CATALOG

With Tons of Commodore Stuff!

Write to: FREE CATALOG
Parsec, Inc.
P.O. Box 111- CW
Salem, MA 01970-0111
USA

The Internet for Commodore C64/128 Users
2nd Edition
by Gaelyne R. Gasson
ISBN: 0-646-32207-9

The only C= 64/128 Internet reference guide, this 296 page manual takes you through hardware and software needed, how to get online and what you can do once you're there. It covers Email, World Wide Web, FTP, IRC, Telnet, Newsgroups, Commodore files, archives and much more.

ONLY $29.95 US + $7.00 shipping via Economy Airmail

Visa, Mastercard, Amex and personal checks welcome.

VideoCam Services
90 Hilliers Rd, Reynella 5161, Sth Australia
Phone: +61 8 8322-2716 Email: videocam@videocam.net.au
Fax: +61 8 8387-5810 WWW: http://videocam.net.au
Also available from Loadstar. Item #900920

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

```
 txa
 jsr PointRecord
 txa
 bne 90$                ;branch on any error.
 tya                    ;is this record empty?
 beq 90$                ;branch if so.
 LoadW r7,#pageBuffer   ;point to the buffer.
 LoadW r2,#5000         ;maximum size of buffer.
 jsr ReadRecord         ;read in the page data.
 txa
 beq 50$                ;branch if no error.
 cpx #BUFFER_OVERFLOW   ;page too big?
 bne 90$                ;branch on any other error.
                        ;the page was too big for our buffer
                        ;but we'll read what we got anyway.

50$
 ldy #255               ;signal data loaded.
 ldx #0                 ;signal no error.
 rts
90$
 ldy #0
 rts

.ramsect

pageNumber:
  .block 1
pageBuffer:
  .block 5000

.psect
```

You always have to be cautious and check for errors. We're doing a simple project here and aren't accomodating the fact that the page may be larger than what our buffer can hold. If the page didn't exist, then PointRecord would have indicated that. We use .y to let the calling routine know if any data was loaded or not.

After ReadRecord brings data into the buffer, it will leave r7 pointing at the byte following the last byte read in. This makes it easy for us to keep track of the end of the data. We'll leave that just like it is. Now let's remove everything from the page data except for the plain old ASCII. We'll also retain any carriage returns and tabs. For your own purposes, you might want to convert the tabs to spaces depending on what your program will end up doing.

As we work our way through the page data in the buffer, we'll watch for font changes, ruler changes, and photo scraps. We will also watch for any bytes that do not belong at all.

```
ExtractAscii:
  LoadB r1L,#[pageBuffer ;r1 will point to the buffer.
  clc
  adc rulerSize+0
  sta r0L               ;and r0 just past the ruler.
  LoadB r1H,#[pageBuffer
  adc rulerSize+1
  sta r0H
  AddVW #4,r0           ;skip r0 just past the font escape.
  ldy #0
10$
  ldx rulerSize         ;set x to the size of the ruler.
  lda (r0),y            ;get a byte from the buffer.
  cmp #ESC_RULER        ;is it a new ruler?
  beq 70$               ;branch if so.
  cmp #NEWCARDSET       ;is it a font change?
  beq 50$               ;branch if so.
  cmp #ESC_GRAPHICS     ;is it a photo scrap?
  beq 60$               ;branch if so.
  cmp #TAB              ;is it a tab character?
  beq 30$               ;branch if so.
  cmp #CR               ;is it a carriage return?
  beq 30$               ;branch if so.
  cmp #$20              ;is it less 32?
  bcc 40$               ;branch if so.
  cmp #$7f              ;must be between $20-$7e.
  bcs 40$               ;branch if not allowed.
30$
  sta (r1),y            ;keep this character.
  inc r1L               ;point r1 to next spot.
  bne 40$
  inc r1H
40$
  ldx #1
  .byte 44
50$
  ldx #4                ;font escape is 4 bytes.
  .byte 44
60$
  ldx #5                ;graphics escape is 5 bytes.
70$
  txa
  clc
  adc r0L
  sta r0L
  bcc 80$
  inc r0H
80$
  CmpWr0,r7             ;are we done yet?
  bcc 10$               ;branch if not.
  rts
```

After that routine, we know where the end of the extracted ASCII is because r0 will now point to one byte past the last valid byte. So, from the start of pageBuffer up until where r0 is pointing, we have pure ASCII text that still has carriage returns ending each paragraph, but without all the special geoWrite codes.

You can see just how simple it is to get the ASCII characters from the page. Now, geoWrite's job isn't quite that simple. We didn't do anything with the fonts or margins or tabs. GeoWrite has to take all this text and format it onto the screen for the user to view and edit. It must keep track of where each word and character is so that the user can point and click with the mouse. GeoWrite is a complex piece of work and is very impressive even if it does have its little quirks now and then. We've all learned to live with them, and now we can learn to work with it's files.

Next time around, we can dig into these files a little deeper and even attempt to create a new GeoWrite file instead of just being able to read one.

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

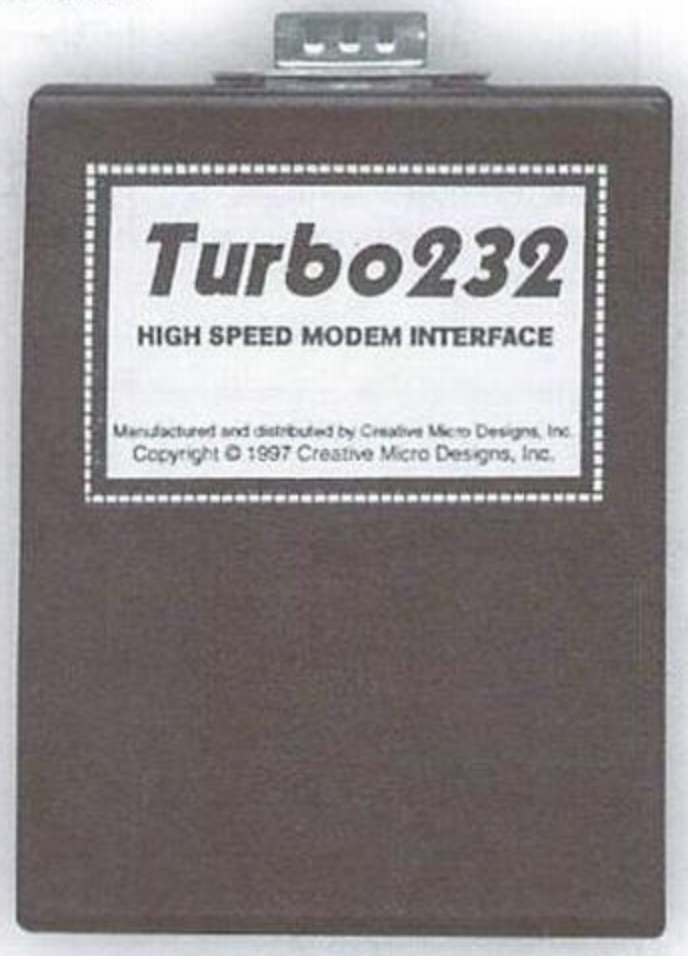
http://www.oldgamesitalia.net/

Turbo232

The New Standard in Modem Interfaces

- **High-Speed Support** *Turbo232 keeps up with today's fastest modems, offering speeds up to 230Kbps*
- **Easy-to-use!** *Just plug Turbo232 into your computer's expansion port and connect it to almost any external RS-232 modem*
- **SwiftLink Compatible** *Designed to work with programs written for the popular SwiftLink cartridge*
- **Easy Configuration** *A simple jumper block lets you quickly change the configuration for special situations*
- **Null Transfers** *May be used as a null-modem interface for direct transfers with other computers*

The quest for faster online access has made 33.6Kbps modems the new standard, and it won't be long before 57.6Kbps modems move into the spotlight. CMD's Turbo232 picks up where SwiftLink left off, helping you keep pace with today's faster modems!


Turbo232
HIGH SPEED MODEM INTERFACE
Manufactured and distributed by Creative Micro Designs, Inc.
Copyright © 1997 Creative Micro Designs, Inc.

Zoom V.34 Plus

- 33.6Kbps Faxmodem
- Upgradable to 56Kbps
- Compatible with geoFAX
- Perfect for use with Turbo232

Turbo232	**$39.95**
Modem Cable	**$9.95**
Turbo232/Novaterm 9.6	**$65.00**
Zoom V.34 Plus	**$149.00**
Turbo232/Zoom V.34 Plus	**$179.00**
Turbo232/Zoom/Novaterm 9.6	**$204.00**

Note: Prices do not include shipping, and are subject to change without notice. Not responsible for typographical errors.

Creative Micro Designs, Inc.
1-800-638-3263

http://www.oldgamesitalia.net/
http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

ASSEMBLY LINE

THE SLIDING INPUT ROUTINE

By Mark Fellows

Writing a machine-language keyboard input routine for the C-64/128 can be a difficult task. Unfortunately, the programmer cannot turn to the Kernal ROM for help because the existing Kernal input routine has too many shortcomings to recommend its use in a well-behaved program. Almost all Commodore programmers know what's wrong with the Kernal input routine because it is used by the BASIC INPUT command, and we all know what can go wrong when we ask for user input in a BASIC program. In case you've forgotten, here's a short list of the problems we've run into:

1) While the user is inputting data, he can move the cursor anywhere on the screen, and can actually scroll your carefully constructed screen display out of sight if he keeps pressing CRSR-DOWN.
2) The Kernal routine cannot process more than 80 characters in 64 mode or 160 characters in 128 mode.
3) Inputting past the end of a screen line can cause the Kernal to insert a blank line on the screen, which will pushes all the lines below it downward.

Needless to say, this kind of behavior can really wreak havoc in an otherwise well-designed program. Being ML programmers, we all know the solution: Write your own input routine!

INSTR – The Enhanced Input Routine

While writing the FCOPY utility for the CMD HD Series hard drives, the need for a better input routine became all too apparent. Writing our own input routine was easier said than done, and of course took a lot more time than we had anticipated. When finished, we found we had a routine that could be used in any type of ML program that required keyboard input. We are publishing INSTR here for our Commodore World ML programmers to use freely in their own programs.

The main features of INSTR are: Restricted cursor movement (left and right only within the predefined limits of the input line); A 'sliding' display which allows the user to input up to 255 characters on a single line; A flashing cursor; Compatibility with both 64 and 128 modes and with 40- and 80-column screens; and an input string that can be pre-initialized.

Calling the Input Routine

Before calling INSTR you must initialize the following variables:

STRROW The row of the input area (0-24).

STRCOL The leftmost column of the input area. 0-39 for a 40-column screen; 0-79 for an 80 column screen.

STRWIN The width of the input area (number of viewable characters). 1-40 for a 40 column screen; 1-80 for an 80-column screen.

STRLEN Limits the maximum length of the input string (1-255).

LFTLIM The leftmost limit of cursor travel within the input area. Setting this variable to a non-zero value is useful when editing a pre-initialized string that begins with characters that the user should not change, such as the slashes and colon ('//:') in a directory pathname.

STRPTR Two-byte zero-page pointer to the beginning of the input string buffer (INBUF).

INBUF The string input buffer. Set the first byte of INBUF to 0 if the user is to enter the entire string from scratch. If a pre-existing string is to be edited, place it at the beginning of INBUF and terminate it with a 0.

The following is an example of the setup code required to call INSTR:

```
;(EXAMPLE OF SETUP CODE FOR INSTR)-------------

        LDA #00
        STA STRROW      ;SET ROW OF INPUT AREA
        LDA #00
        STA STRCOL      ;SET COLUMN OF INPUT AREA
        LDA #20
        STA STRWIN      ;INPUT AREA 20-COL. WIDE
        LDA #255        ;ALLOW STRING UP TO 255
        STA STRLEN      ;CHARACTERS LONG
        LDA #00         ;ALLOW EDITING WITHIN
        STA LFTLIM      ;ENTIRE INPUT AREA
        LDX #<INBUF
        LDY #>INBUF
        STX STRPTR      ;SET POINTER TO BUFFER FOR
        STY STRPTR-1    ;INPUT STRING
        LDA #00         ;USER WILL START WITH
        STA INBUF       ;BLANK STRING
        LDA #$80        ;(USE 00 FOR 64 MODE)
        STA MODE        ;SET 128 MODE
        JSR INSTR       ;CALL THE ROUTINE
```

```
;(INSTR - ENHANCED STRING INPUT ROUTINE)--------

;(CONSTANTS)

DATCO   = $01           ;INPUT TEXT COLOR
STRPTR  = $FA           ;ZERO-PAGE POINTER
CHROUT  = $FFD2         ;KERNAL CHARACTER OUTPUT
PLOT    = $FFF0         ;KERNAL CURSOR POSITION
GETIN   = $FFE4         ;KERNAL CHARACTER INPUT

;(VARIABLES)

CPOS    .BYT 0
LCOL    .BYT 0
LFTLIM  .BYT 0
STRROW  .BYT 0
STRCOL  .BYT 0
STRWIN  .BYT 0
STRLEN  .BYT 0
RVSFLG  .BYT 0
MODE    .BYT 0          ;SET BIT 7 FOR 128 MODE
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

```
;(INSTR MAIN LOOP)-------------------------------

INSTR   LDA LFTLIM        ;ENTER HERE
        STA CPOS          ;SET CURSOR POSITION
        LDA #00           ;FIRST CHARACTER OF STRING
        STA LCOL          ;AT LEFT OF INPUT AREA
GETSTR  JSR DRWSTR        ;DISPLAY THE CURRENT STRING
        JSR RVSON         ;REVERSE CURSOR
GETS10  LDX #30           ;VALUE FOR BLINK TIME
GEKEY   JSR GETIN         ;GET KEYPRESS
        BNE +             ;IF A KEY PRESSED
        LDY #10           ;NO KEYPRESS
        JSR DELYMS        ;WAIT 10 MILLISECONDS
        DEX
        BNE GEKEY         ;NOT DONE - LOOP AGAIN
        LDA RVSFLG        ;TIME TO SWITCH CURSOR
        BEQ GETSTR        ;IF RVS OFF, TURN IT ON
        JSR RVSOFF        ;IF RVS ON, TURN IT OFF
        JMP GETS10
+       PHA               ;SAVE KEY PRESSED
        JSR RVSOFF        ;TURN OFF CURSOR
        PLA
        LDX #5            ;SEE IF KEY NEEDS TO BE
-       CMP EDKEYS,X      ;HANDLED SPECIALLY
        BEQ EXKEY         ;YES - GO DO IT
        DEX
        BPL -

;(PUT CHARACTER AT CURSOR)-----------------------

PUTCHR  LDY CPOS
        CPY STRLEN        ;EXIT IF CURSOR IS AT END
        BCS GETSTR        ;OF STRING
        PHA               ;SAVE CHARACTER
        LDA (STRPTR),Y    ;IS CURSOR AT END OF BUFFER
        BNE +             ;NO - BRANCH
        INY               ;YES
        STA (STRPTR),Y    ;MOVE TERMINATOR (0) UP ONE
        DEY
+       PLA
        STA (STRPTR),Y    ;PUT CHARACTER AT CURSOR
        JSR MOVRT         ;MOVE THE CURSOR RIGHT
        JMP GETSTR        ;BACK TO MAIN LOOP

;(EXECUTE SPECIAL KEY ROUTINES)------------------

EXKEY   TXA
        ASL A
        TAX               ;CALCULATE INDEX
        LDA EKADDR,X      ;GET COMMAND ADDRESS
        STA JMPKEY+1      ;SETUP JSR LO ADDR
        LDA EKADDR+1,X
        STA JMPKEY+2      ;SETUP JSR HI ADDR
JMPKEY  JSR JMPKEY        ;JSR TO COMMAND
        JMP GETSTR        ;BACK TO MAIN LOOP

EDKEYS  .BYT 13           ;RETURN
        .BYT 20           ;DELETE
        .BYT 148          ;INSERT
        .BYT 29           ;CRSR RIGHT
        .BYT 157          ;CRSR LEFT
        .BYT 34           ;QUOTE
EKADDR  .WOR RETURN, DELETE, INSERT, CRIGHT, CLEFT
        .WOR EKRTS
```

```
;(HANDLE CARRIAGE RETURN)------------------------

RETURN  LDA #00
        STA LCOL          ;POSITION STRING & CURSOR
        STA CPOS          ;AT LEFT OF INPUT AREA
        PLA               ;FIX STACK SO WE WILL
        PLA               ;RETURN TO CALLING ROUTINE
        JMP DRWSTR        ;DISPLAY THE STRING & EXIT

;(HANDLE CURSOR RIGHT)---------------------------

CRIGHT  LDY CPOS
        LDA (STRPTR),Y    ;AT END OF STRING ALREADY?
        BEQ EKRTS         ;YES, DON'T DO ANYTHING

MOVRT   INY
        STY CPOS          ;MOVE CURSOR TO RIGHT
        TYA
        SEC
        SBC LCOL          ;SEE IF WE NEED TO SLIDE
        CMP STRWIN        ;THE STRING TO THE LEFT
        BCC EKRTS         ;NO - EXIT
        INC LCOL          ;YES - SLIDE IT TO THE LEFT
EKRTS   RTS

;(HANDLE DELETE KEY)-----------------------------

DELETE  LDY CPOS          ;ARE WE AT THE LEFT LIMIT
        CPY LFTLIM        ;OF CURSOR MOVEMENT?
        BNE DELCHR        ;NO - BRANCH
        LDA (STRPTR),Y    ;YES - ANY CHARACTERS LEFT?
        BEQ EKRTS         ;NO - NONE LEFT TO DELETE
        INY               ;YES - DEL. CHR UNDER CRSR

DELCHR  LDA (STRPTR),Y    ;MOVE CHARACTERS IN STRING
        DEY               ;TO THE LEFT
        STA (STRPTR),Y
        TAX               ;END OF STRING?
        BEQ CLEFT         ;YES - NOW MOVE CURSOR
        INY
        INY               ;POINT TO NEXT CHARACTER
        BNE DELCHR        ;BRANCH BACK

;(HANDLE CURSOR LEFT)----------------------------

CLEFT   LDY CPOS
        CPY LFTLIM        ;ALREADY AT LEFT LIMIT?
        BNE +             ;NO - BRANCH
        LDA LCOL          ;YES - SEE IF WE NEED TO
        BNE DECLCO        ;SLIDE STRING TO RIGHT
        RTS               ;NO - ALREADY AT LAST CHAR.

+       DEY
        STY CPOS          ;MOVE CURSOR LEFT
        CPY LCOL          ;NEED TO SLIDE RIGHT?
        BCS +             ;NO - BRANCH
DECLCO  DEC LCOL          ;YES - SLIDE STRING RIGHT
+       RTS
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

```
;(HANDLE INSERT KEY)-----------------------------

INSERT  LDY #00
-       LDA  (STRPTR),Y   ;LOOK FOR END OF STRING
        BEQ +             ;FOUND IT
        INY
        BNE -
+       CPY STRLEN        ;SEE IF AT MAXIMUM LENGTH
        BCS INSRTS        ;YES - EXIT

-       LDA  (STRPTR),Y   ;MOVE CHARACTERS UP ONE
        INY               ;POSITION
        STA (STRPTR),Y
        DEY
        DEY
        CPY #$FF          ;DON'T GO TOO FAR
        BEQ +
        CPY CPOS          ;AT CURSOR YET?
        BCS -             ;NO - MOVE ANOTHER
+       INY               ;DONE MOVING
        LDA #$20          ;PUT A SPACE UNDER THE
        STA (STRPTR),Y    ;CURSOR
INSRTS  RTS

;(DISPLAY STRING IN INPUT AREA)------------------

DRWSTR  LDX STRROW        ;PUT CURSOR AT FAR LEFT
        LDY STRCOL        ;OF INPUT AREA
DRWSXY  CLC
        JSR PLOT          ;KERNAL POSITIONS CURSOR
        LDA #DATCO        ;SET DISPLAY COLOR
        JSR CHROUT
        JSR QUOMOD        ;QUOTE MODE ALL CHR VISIBLE
        LDX #00
        LDY LCOL          ;START WITH LEFTMOST CHR
-       LDA (STRPTR),Y    ;GET CHARACTER
        BEQ -             ;END OF STRING? BRANCH YES
        INY               ;POINT TO NEXT CHARACTER
        .BYT $2C          ;SKIP NEXT INSTRUCTION
+       LDA #32           ;SPACES FILL REST OF LINE
        JSR CHROUT        ;OUTPUT THE CHARACTER
        INX
        CPX STRWIN        ;DONE YET?
        BCC -             ;NO - BRANCH
                          ;YES - DROP THRU TO CLRQUO

;(SET/CLEAR QUOTE MODE)--------------------------

CLRQUO  LDA #00           ;VALUE TO CLEAR FLAG
        .BYT $2C          ;SKIP NEXT INSTRUCTION
QUOMOD  LDA #01           ;VALUE TO SET FLAG
        BIT MODE          ;CHECK MODE
        BMI +
        STA $D4           ;SET FLAG FOR 64 MODE
        RTS
+       STA $F4           ;SET FLAG FOR 128 MODE
        RTS
```

```
;(SET/CLEAR REVERSE ON/OFF FOR CURSOR BLINK)-----

RVSON   SEC               ;FLAG FOR LATER
        .BYT $24          ;SKIP NEXT INSTRUCTION
RVSOFF  CLC               ;FLAG FOR LATER
        PHP               ;SAVE FLAG
        LDA CPOS          ;CURSOR POSITION WITHIN STR
        SEC
        SBC LCOL          ;CONSIDER SLIDE POSITION
        CLC
        ADC STRCOL        ;LEFT SIDE OF INPUT AREA
        TAY               ;MOVE COLUMN TO .Y
        LDX STRROW        ;GET ROW TO .X
        CLC
        JSR PLOT          ;KERNAL POSITIONS CURSOR
        LDA #DATCO        ;COLOR
        JSR CHROUT        ;SET DISPLAY COLOR
        PLP               ;TEST THE FLAG
        BCC +             ;BRANCH IF RVSOFF
        LDA #18
        JSR CHROUT        ;OUTPUT RVSON COMMAND
        .BYT $2C          ;SKIP NEXT INSTUCTION
+       LDA #00
        STA RVSFLG        ;SET/CLEAR OUR FLAG
        JSR QUOMOD        ;ALL CHR WILL BE DISPLAYED
        LDY CPOS
        LDA (STRPTR),Y    ;GET THE CHR UNDER CURSOR
        BNE +             ;AT END OF STRING?
        LDA #32           ;YES, OUTPUT A SPACE
+       JSR CHROUT        ;OUTPUT THE CHARACTER
        JSR CLRQUO        ;CLEAR QUOTE MODE
        LDA #146
        JMP CHROUT        ;OUTPUT RVSOFF & EXIT

;(DELAY USED FOR CURSOR BLINK)-------------------

DELYMS  PHA               ;SAVE .A
        LDA #$7F
        STA $DD0D         ;CLEAR ICR OF CIA #2
        LDA #$08
        STA $DD0E         ;CLEAR CRA OF CIA #2
        STA $DD0F         ;CLEAR CRB OF CIA #2
        LDA #$FF
        STA $DD04         ;SETUP TIMER A LOBYTE
        LDA #$04
        STA $DD05         ;SETUP TIMER A HIBYTE
-       LDA #$11
        STA $DD0E         ;START TIMER A
-       LDA $DD05         ;HAS TIMER COUNTED DOWN?
        BNE -             ;NO - KEEP WAITING
        DEY               ;YES - DEC .Y
        BNE --            ;BRANCH IF NOT DONE
        PLA               ;RESTORE .A
        RTS

;(SPACE FOR STRING BUFFER)-----------------------

INBUF   .BUF 256          ;STRING BUFFER
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

816 BEAT

USING THE MVN AND MVP INSTRUCTIONS

By Mark Fellows

In this issue, we'll be exploring two of the most useful new 65C816 instructions—MVN and MVP. These instructions provide an easy, efficient way to move blocks of data anywhere within the 16 MB address space of the '816. Cycle-for-cycle, MVN and MVP are faster at moving data than any multiple-instruction loop, and use only 3 bytes of code space. Setting up for the instructions is easy, but in order to avoid problems, the programmer must thoroughly understand how each instruction works.

Speed

MVN and MVP move one byte every 7 machine cycles. On a 20 MHz SuperCPU, this provides a maximum data transfer rate of approximately 2.9 MB per second. If the destination address lies within Bank 0, then the transfer rate may be somewhat slower because in its default configuration the SuperCPU mirrors all writes to Bank 0 into the slower memory of the 64/128. In this case, the data transfer rate is approximately 1 MB per second (the same as a 17xx series REU). Programmers can eliminate this slowdown by using one of the SuperCPU optimization modes if the data being moved does not need to be displayed on-screen by the VIC chip.

Why two Instructions?

Good question. If the source and destination blocks never overlapped, there would be no need for a second instruction. However, if you've ever written a general-purpose routine to move memory, then you know that you must be careful when the source and destination blocks overlap, or else the data can become corrupted. If the destination is at a lower address than the source, then the data must be moved by starting at the first byte and working upward (MVN operates this way). Conversely, if the destination is at a higher address than the source, then the data must be moved by starting at the last byte and working downward (MVP operates this way).

MVN – Block Move Negative

Using MVN is pretty simple. First, put the '816 in Native mode with all registers in 16-bit mode. Load .X with the source starting address, .Y with the destination starting address, and .A with the transfer length-1 (a transfer length of $0000 will move one byte, $FFFF will move 65536 bytes, etc.). When the command is complete, .A will contain $FFFF, and .X and .Y point one byte beyond the end of their respective blocks. Because it is so easy to use, we recommend using MVN in all cases except when the destination block overlaps the source at a higher address.

```
;(MVN EXAMPLE CODE)-----------------------------
;ASSUMES NATIVE MODE W/ALL REGISTERS 16-BIT

MOVNEG  PHB             ;SAVE DATA BANK REGISTER
        LDA #$1FFF      ;TRANSFER $2000 BYTES
        LDX #$2000      ;FROM $002000-$003FFF
        LDY #$A000      ;TO $02A000-$02BFFF
        MVN  $00,$02    ;DO IT
        PLB             ;RESTORE DATA BANK REGISTER
```

MVP – Block Move Positive

Using MVP is a bit more difficult than using MVN. Again, the '816 should be in Native mode with all registers set to 16-bit. Load .X with the address of the last byte in the source block, .Y with the address of the last byte in the destination block, and .A with the transfer length-1. When the command is complete, .A will contain $FFFF, and .X and .Y point one byte below the beginning of their respective blocks.

Some math may need to be done before loading .X and .Y if you don't already know the last address in each block. The math itself is simple, however, you just add the transfer length-1 to the starting address of each block before transferring the values to .X and .Y. Remember, you *must* use MVP when the destination block overlaps the source at a higher address.

```
;(MVP EXAMPLE CODE)-----------------------------
;ASSUMES NATIVE MODE W/ALL REGISTERS 16-BIT

MOVPOS  PHB             ;SAVE DATA BANK REGISTER
        LDA #$1FFF      ;MOVE $2000 BYTES
        LDX #$3FFF      ;FROM $022000-$023FFF
        LDY #$4FFF      ;TO $023000-$024FFF
        MVP  $02,$02    ;DO IT
        PLB             ;RESTORE DATA BANK REGISTER
```

Important Points to Remember

- If the .X and .Y registers are in 8-bit mode or if the '816 is in Emulation mode, then MVN and MVP can only move data within the memory range $xx0000-$xx00FF. This is because the high byte of the .X and .Y registers is always forced to 00 in these two cases.
- MVN and MVP affect the Data Bank Register! After these instructions are finished, the Data Bank Register contains the destination bank address specified in the command. Therefore, you should save the Data Bank Register before using MVN/MVP and then restore it afterwards.
- MVN and MVP will NOT cross a bank boundary. They will instead wrap back to address $0000 in the specified source or destination bank.
- MVN and MVP can be interrupted by an IRQ, NMI or ABORT. The return address pushed onto the stack when MVN/MVP are interrupted is the address of the block move instruction. Execution will resume upon RTI provided the registers and processor status have been restored .
- On a SuperCPU, we recommend locating your MVN/MVP routines in Bank 0. Running MVN and MVP from the fast Static RAM in Bank 0 will reduce the DRAM precharge overhead when moving the memory that lies within the SuperRAMCard (Banks $02 - $F5).
- If you are using .BYT directives in a non-65C816 assembler to implement MVN/MVP, please note that the source and destination bank must be in the reverse order from the '816 assembler syntax shown above. For example, the MVN instruction in the sample code would be entered:

```
.BYT $54,$02,$00
```


http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

* CLASSIFIED ADS *

C=Hacking in Print! $6.00 Not simply a printout! Jim Brain, 10710 Bruhn Ave, Bennington, NE 68007. Printout of COMP.SYS.CBM FAQ: $12.00. Prices include shipping.

For Sale: Schnedler 4 MHz CPU and Turbo Master Adapter. Make Offer. 602-266-3599

Wanted: General Ledger software package from Cymbal Software. Reply to: Jean Uhl, 1742 Younger Ave., Pittsburgh, PA 15216.

Wanted: GEOS-compatible LaserWriter printer/ doc's, Amazon & farenheit 451 games/docs. Send info: Mike Bean, 4557 S. Kirkman Rd. #2, Orlando, FL 32811

C-64, 1702 monitor, 3-1541 drives, 2-fans, Lbow ext., Final Cartridge, gemini 10X, manuals, and some software $525 + shipping. Phone Sat/Sun only 10AM-6PM ESDT (941) 466-6134.

For Sale: 2 - 1581 drives $75 ea.; 1581 Tool Kit $10; Print Shop & Companion + graphics on 9 disks $25. Manuals included. J. Lambert, 1121 Williams, Hastings, NE 68901

GEOS Publication. The all-GEOS Publication with the personal touch. GEOS is an international graphics environment operating system, enhanced by CMD's SuperCPU. Thirty-two pages for $14.00 a year or $25 for two years. An input publication with resource articles. wcpat@iglou.com or 7969 Woodcrest Dr., Louisville, KY 40219-3859.

ADVERTISERS INDEX

Centsible Software 5
Commodore Country 7
Commodore World 5,13,17,40
Computer Bargain Store 17
CMD IFC,5,7,17,20-21,25,35,40,IBC,OBC
J.P. Products by Mail 33
Loadstar 3
Parsec 33
Meeting 64/128 Users Through The Mail 33
Paxtron 17
Raymond Computer 7
Sunrise Software 25
Tech Star 7
Videocam Services 33
Vintage Computers 33

COMMODORE WORLD
Classified Advertising

Commodore World subscribers may place non-commercial classified advertising in *Commodore World* at a cost of $10.00 per issue. Your advertisement may contain up to 150 characters (including spaces). Send your advertisement with payment to: CW Classified Advertising, c/o Creative Micro Designs, Inc., P.O. Box 646, East Longmeadow MA 01028-0646.

CMD Service Center

AFFORDABLE • FAST • DEPENDABLE

Call Today 1-800-638-3263

Our Team of Technicians are Among the Most Qualified in the Industry! Why Settle for Anything Less Than the Best?

We repair the following equipment: Commodore C-64, 64C, SX-64, C-128 and C128-D computers; 1541, 1541C, 1571 and 1581 Disk Drives plus CMD Devices. JiffyDOS Installations a specialty. All repairs warranted for 30 days. Minimum charge $35.00 plus parts and return shipping. You must contact CMD for authorization before sending any equipment.

Creative Micro Designs, Inc. P.O. Box 646 E. Longmeadow, MA 01028

Don't wait until it's too late...

RENEW EARLY!

Is your Commodore World subscription close to running out? Here's an easy way to check: look at the mailing label on the front of your copy. You'll find your subscription number and the expiration issue number. For example:

```
James Smith  12345EXP19
123 Home Street
Grand Rapids, MI 49502-0123
```

Jim's subscription will run out with Issue 19 as indicated by the EXP19 in his subscription code. Jim would be wise to re-subscribe early to avoid missing a single issue of Commodore World!

Moving?

Don't forget to notify COMMODORE WORLD!

Please call or write with your change of address 6 to 8 weeks prior to your move so that you won't miss a single issue!

CW Address Change, P.O. Box 646, E. Longmeadow, MA 01028

413-525-0023

http://www.oldgamesitalia.net/ http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

Shatter the 1MHz Barrier

SuperCPU

20 MHz Accelerators for the C-64 & C-128

BREATHING NEW LIFE INTO YOUR COMPUTER

THE SUPERCPU INCREASES YOUR COMPUTERS PROCESSING SPEED BY MORE THAN 20 TIMES! SIMPLY PLUG IT IN AND WATCH OLD PROGRAMS COME TO LIFE AND BEGIN DREAMING ABOUT THE POWERFUL NEW GENERATION OF SUPERCPU COMPATIBLE SOFTWARE FOR 1997!

What will the SuperCPU do for me?

Programs will suddenly spring to life—screens and menus pop up instantly, scrolling becomes fluid, and graphics fly. A C-64 equipped with the SuperCPU is like having a Volkswagen with a V-8. There's one small exception—the SuperCPU rides much smoother. Even though the SuperCPU gives your computer a radical increase in horsepower (up to 22 times faster), its operating system makes that power usable by maintaining compatibility with most existing software and making its operation transparent to the user.

Looking to the future, the powerful 65816 microprocessor gives programmers vast new resources to create powerful and sophisticated software. With its 16-bit registers, up to 16 MB of system memory, and 6502/6510/8502 emulation, the SuperCPU makes it easy to enhance existing software as well as providing the power to create Internet browsers, animation and other high-tech applications! The SuperCPU provides a bright future for a new generation of Commodore computing.

So join the Commodore revolution and order a powerful new SuperCPU TODAY!

SuperCPU 64 $199.00*
SuperCPU 128 $299.00**

* Plus Shipping: US $10 / AK,HI,PR $20; Canada $20
** $50 Deposits being accepted now. Available in 1997.

Ultra Fast • Compatible • Easy-to-use

- High-Speed microprocessor, 128K fast RAM, advanced hardware logic, and up to 512K ROM enable you to run all types of existing commercial software at speeds up to 22 times faster than stock machines.
- BASIC programs, including most Bulletin Board Systems, seem to run as fast as machine language, and compiled BASIC programs run faster than ever!
- Commercial machine language programs (databases, spreadsheets, word processors, telecommunications, graphics, etc.) run so fast that you'll think your running them on another computer!
- GEOS comes alive—No typing or scrolling delays, graphic operations happen instantly, faster printing and disk access! Includes enhanced GEOS setup utility!
- Easy-to-use: Plug it into your cartridge port and start working—no messy cables or special adjustments.
- Built-in JiffyDOS Kernal boosts disk access speed up to 15x faster with JiffyDOS equipped drives.
- Pass-thru port provides compatibility with RAMLink, SwiftLink, GEORAM, 17xx REU's and other cartridges.
- Unit Enable/Disable, JiffyDOS On/Off, Normal/Turbo Speed, and Reset switches make using the SuperCPU a snap. An internal connecector simplifies future expansion.

NOW AVAILABLE: SUPERRAM CARD FOR SUPERCPU—ADD UP TO 16 MB OF RAM!

SuperRAM Card (0 MB) $79 • 1 MB $94 • 2 MB $114 • 4 MB $139 • 16 MB $179

SuperCPU 64 w/SuperRAM (0 MB) $259 • 1 MB $274 • 4 MB $294 • 8 MB $319 • 16 MB $358

Prices do not include shipping and are subject to change without notice. Not responsible for typographical errors

http://www.oldgamesitalia.net/
http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/

The wait is over.

Have you been waiting for the most powerful image editing tool ever devised for the Commodore 64? Are you ready for a program that not only converts between many of the popular Commodore and non-Commodore image formats, but also lets you combine images in a myriad of ways, and apply special effects? If you answered yes to these questions, then your wait is over. Prepare to be creative, to explore new ideas, and to do the kind of things you thought you'd never do with a Commodore.

GODOT

Combine Several Images Easily

Convert Between Many Formats

Dither Color & Greyscale Images

Apply Special Effects Like Cartoon To Any Image

program creators

Arndt Dettke • Wolfgang Kling

distributed in the united states by

Creative Micro Designs, Inc.

CMD

http://www.oldgamesitalia.net/

http://www.oldgamesitalia.net/